A Model for Effective Use of Human Resource Information Systems in South African State Owned Agencies

By

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THESIS ABSTRACT

The relevance of this thesis is in addressing information systems business leadership HRIS use issues.The thesis explains acceptance and use issues central to Human Resource Information Systems (HRIS) within South African State Owned Agencies (SOAs). Organisations typically deploy HRIS with a view to automate Human Resource (HR) service delivery and administrative functions. Among other values, HRIS produces useful data and information which optimises HR operations and improves decision-making. However, the use of HRIS, notably within SOAs, is poorly understood owing to inadequate literature and contextualised studies. Despite the tremendous amount of investment into such systems, SOAs continuously identify emerging challenges and issues pertinent to HR operations and administration. For instance, despite HRIS automation, job applications and recruitment are still manually processed, which means that the costly implemented HRIS is not effectively used, and is thus underutilised.

The burning questions for business leadership remain - why is HRIS not optimally utilised given significant organisational investment on such systems, and the mixed return-on-investments? The other question relates to what the level of acceptance is and actual use of these HR systems. There is also a need to determine to what extent do these systems enable or improve the delivery of human resource services and administration. Moreover, what influences the use of HRIS? Previous literature and organisational practice inadequately addresses these questions. This thesis, therefore, addresses these key issues to bridge these preceding knowledge gaps.

In order to explain the use and subsequent effective use of HRIS, the study triangulated three theories as theoretical lenses. These theories are the Unified Theory of Acceptance and Use of Technology (UTAUT), Self Determination Theory (SDT), and the Representation Theory (RT). These theories are employed to explore and explain the individual use, and subsequent effective use of HRIS. In this respect, the ontological stance for this thesis is that reality is objective. Thus, the study followed a positivist research paradigm, whilst the research the approach was deductive. A survey research strategy was employed during the study to obtain primary data. Survey participants included executives and individuals from speciality units e.g. HR, Finance, Supply Chain, Support departments (including IT and Help Desks) as well as other HRIS users. Participants were drawn from various South African SOAs.

Structural equation modelling and hypothesis testing show that there are myriad of determinants influencing use and effective use of HRIS. The results further show that certain constructs are inconsistent with the existing literature. Nevertheless, this inconsistency speaks to the unique South African SOA contexts. The outcome of the study is a model which theoretically and practically explains those factors which must be considered to effectively use and utilise HRIS. That is, the theoretical, practical, methodological, and contextual contributions of the thesis is in explaining the determinants which are significant for effective use of HRIS.

Keywords: Human Resource; Human Resource Information Systems; Unified Theory of Acceptance and Use of Technology; Task-Technology Fit; Self-determination Theory; Representation Theory; State-owned Agency; South Africa

DECLARATION

I, Thembi Merlyn Mabaso, declare that the study titled *A Model for Use of Human Resources Information System (HRIS) in South African State-owned Agencies,* is my own work. All the sources used in this study have been quoted and acknowledged in the reference section of this thesis. I also declare that the study, or part thereof have not been previously submitted, to any higher institution of learning for the purpose of degree or otherwise.

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Thembi Merlyn Mabaso

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As a final word, I would like to thank each and every individual who participated in the study. Their participation gave invaluable insights which gave this thesis a meaning.

DEDICATIONS

This thesis is dedicated to my late mother and late brother. Your memories and spirits keep me going.

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List of ABBREVIATIONS

ACM	Association of Computing Machine
AGFI	Adjusted Goodness-of-Fit Index
AIS	Association of Information Systems
AU	Acceptance and Use
AVE	Average Variance Extracted
BI	Behavioural Intention
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index

CMC	Computer-Mediated Communication
CR	Composite Reliability
DV	Dependent Variable
EE	Effort Expectancy
EU	Ease of Use
FC	Facilitating Condition
HR	Human Resource
HRIS	Human Resource Information System
HRM	Human Resource Management
HRP	Human Resource practices
ICT	Information and Communications Technology
ICT4D	Information and Communications Technologies for Development
IFI	Incremental Fit Index
IS	Information Systems
IT	Information Technology
IV	Independent Variable
PC	Personal Computer
PCA	Principal Factor Analysis
PE	Performance Expectancy
PEU	Perceived Ease of Use
SE	Self-Efficacy
SEM	Structural Equation Modelling
SI	Social Influence
SOAs	State Owned Angencies
TLI	Tucker-Lewis Index
TPB	Theory of Planned Behaviour
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER 1: INTRODUCTION AND BACKGROUND

This thesis explains the use of Human Resource Information Systems (HRIS) by individuals in South African state-owned agencies. HRIS is believed to help improve human resource service delivery and administration. The information generated by these information systems is useful and imperative for better operations, functions, and decision-making processes. However, the use of HRIS in South African state-owned agencies has not been adequately studied and thus the use is still ill-understood.

Although HRIS is implemented to enhance and improve HR process and practice, the stakeholders continue to see challenges and issues with how State-owned agency HR service is delivered; for example, the on-demand information is often lacking, inefficiency and incorrect information for decision-making are prevalent.

The questions in the stakeholders' minds are then, "*What is the acceptance and actual use of the Human Resource Information Systems by individuals*? *To what extent are these enabling or improving the delivery of State-owned Agencies' HR operations and administration*? *Why is HRIS used or not used? What influences the use of these Human Resource Information Systems*?" These questions are inadequately addressed in the existing literature, and thus leaving knowledge gaps which need to be filled. The relevance of this thesis is in addressing these Information Systems key issues.

This introductory chapter is outlined as follows: firstly, it introduces the field of study; the key terms making up the research topic are defined; secondly, the relevance of this study; thirdly, the background to the research problem is given; this is followed by the problem statement, study's purpose, the goal of the study, objectives of the study, research questions; and lastly, study delineations are discussed.

1.1 BACKGROUND TO THE FIELD OF STUDY

This section introduces the field studied by reviewing and discussing Human Resource Information Systems and their use. The key terms which make up the thesis title are briefly defined to help the reader to understand the research area.

The size of an organisation often governs HRIS practice, the type of module it implements, and how the idea is analysed. Moreover, certain core modules such as personnel administration precede over others, resembling administration, and training. Correspondingly, new HRIS users usually opt for low-cost answers.

In-house database development is a trendy option for smaller organisations adopting HRIS for the first time as noted by Havadi *et al.,* (2016) . Kavanagh, (2009) indicated smaller organisations would go for low-cost and low-risk HRIS purchases; typically cheaper, more software that was flexible or in-house HRIS development. Moreover, of those who utilised HRIS technology, less than half of the sample used it in training and recruitment, and those who used it were small-scale companies (Kavanagh, 2009).

Human Resource Information Systems define the combination of Information Technology and Human Resource Management (HRM). These information systems are supposed to speed administrative efficiency while also producing on-demand reports capable of improving decision-making (Miles, 2014).

Leitch (2010), observed that, limited differences existed between a large company and Small Medium (SME) HRIS' implementation, and that precise use of HRIS for strategic collaboration enhanced professional standing. Nevertheless, a note of attentiveness was added that the enhanced professional standing was not as pronounced, or alternatively that the experience was not the same in other professions (Miles, 2014).

Organisational executives identified that HRIS use has not enhanced their professional standing within the organisation, but they noted a substantial HRIS implementation payback to the company Leitch, (2010). Armstrong & Taylor, (2020) discovered the diffusion of human-resource information-technology innovations in the United States and non-United States companies. The study critically analysed the correlation between the

number of attained ITS and HR-transactions automation supports the general call for more formalised HR-technology approaches at the firm level to manage purchasing and implement decisions. This argument is supported by Rodwell & Teo, (2014), based on their study which surveyed Private Indian firms. The study in particular, investigated the impact of Information Technology (IT) on Human Resources Management [HRM] training policies. This study found that information system enhanced the management flexibility, specific to learning times, trainers' active participation, and the development of control mechanisms.

A similar study conducted by Kavanagh, (2009) confirmed that HRM systems might lead to a continued competitive benefit through the formation and development of knowledge-based resources (Grant, 1991). Literature on human resource management tend to suggest a positive correlation between Human Resource Management Systems, strategic organisational resources and the sustained competitive benefit.

1.2 MOTIVATION AND SIGNIFICANCE OF THE STUDY

Having briefly discussed the HRIS use in organizations, this section now describes the relevance of the present study relative to the research discipline and the body of knowledge. The motivation and relevance of the study is articulated as follows;

1.2.1 Relevance of This Study to Information Systems Business Leadership

This thesis explains the use of Human Resource Information Systems by individuals' in South African State-owned Agencies' context. In order to understand the use of HRIS by individuals, the study employed three different theories as theoretical lenses. The theories are the Unified Theory of Acceptance and Use of Technology (UTAUT), the Representation theory, and Self-determination Theory (SDT), to study and explain factors that may be influencing individuals to use HRIS.

The model for use of Human Resource Information Systems by individuals' in State-owned Agencies is the outcome of the present study. This thesis, therefore, contributes

towards a theory of the use of Human Resource Information Systems, especially by individuals.

1.2.2 Relevance of this study to Information Systems literature

There has been general slackness of literature regarding the implementation of standardised Human Resource practices through the use of HRIS, especially in the context of SOAs. The goal of the study was therefore to conceptualise a model for the use of HRIS in state-owned agencies.

A cursory review of the relevant literature suggests that HRIS is still in its initial stages since HRIS is a fairly new concept in the South African SOAs. There are knowledge gaps within literature as to what explains the use of HRIS and what could be done to improve its use. Therefore, ascertaining the levels of influence to use of HRIS in SOAs would be very important and would contribute to the body of knowledge, especially in the South African context.

This study contributes to the ways in which the use of HRIS could be improved to subsequently enhance Human Resource operations and service delivery (i.e. function and administration).

1.2.3 Relevance of this Study to Context

The reason for investing in Human Resource information systems is to use them to improve HR service delivery and efficiency. This thesis unveils factors that should be considered to improve the use of HRIS so that the delivery of HR services and administration in State-owned Agencies is effective and enhanced.

This study explored factors which explains the use of Human Resource information systems by individual practitioners. The thesis contributes contextually by examining these factors in South African State-owned Agencies. That is, the thesis gives an insight that may be unique to South Africa and its state-owned agencies.

The following sections provides background to the research problem which this study addressed.

1.3 BACKGROUND TO THE RESEARCH PROBLEM

The present study was conducted in the context of the South African state-owned agencies (SOAs). South African SOAs lead to the growth of the economy in several ways, for example, the decline in joblessness and a rise in the gross domestic product (GDP) (Nalla &Varalaxmi, 2014). As the SOAs are the main provider in the formation of employment in the economy, the management of human resources becomes a significant factor (Powell & Dent-Micallef, 1997).

The Human Resources (HR) departments of these SOAs are responsible for the agency transformation since they deal with human resource operations, processes, and decision-making. The use of human resource information systems is therefore imperative as this may help increase efficiency for the agencies. There is a need for individuals in the South African State-Owned Agencies to fully use HRIS. Several companies only use parts functionalities, particularly in loading the company employee information in the system (Hamayun, 2014).

Udekwe & Andre (2017) advocates that HR departments are often under scrutiny to reduce costs while enhancing services rendered to employees. Improved services, ultimately lead to happier employees; security of employee information; and employee confidence in the HRIS system. Consequently, this improves the overall effectiveness and efficiency of employees within the organisation.

Data quality remains a drawback in the South African SOAs. So many human errors occur, subsequent in poor data quality and leading to employees not unquestioning the system. The professed absence of data quality also disturbs the analytics and reports produced from the organizations.

1.3.1 Challenges in State-owned Agencies HR service delivery and role of HRIS

South African SOA's are faced with many multidimensional challenges within their HR departments and these include manual job application methods, routine tasks instead of strategic tasks, short supply of development skills, poor practices in organisational design, inadequate planning, underutilisation of available information systems which often results in frustrated, discontent employees and customers.

For HRM to be effective, it needs to be supported by a proper information management system by way of technology (Garg, 2013; Grobler, 2005; Mishra & Akman, 2010). A cursory review of the literature indicates that there is a lack of literature in relation to the HRIS use in the context of South African SOAs. There is a fundamental need for effective and efficient HR practices (Dottorato & Benfatto, 2010; Shiri, 2012).

Government agencies in countries such as Canada (Monks *et al.*, 2013); Germany (Singh *et al.,* 2011); the United States (Botha, 2014); and the United Kingdom (Ragin, 2009) have implemented HRIS for delivering HR services and administration. These countries have seen a Return on Investment (ROI) in investments allocated for HRIS, through the quality of HR service delivery rendered to their citizens (Troshani *et al*., 2011). Therefore, there is a need to explore and explain the reasons for HRIS use in South African SOAs.

1.3.2 Context of a South African State-owned Agencies

Human resource information systems (HRIS) are announced in SOA's to reinforce the planned purposes of organisations by providing precise information connecting to human resources at the lowest time and cost (Ara & Das, 2015).

It is a three-way division of errands allocated to executive political heads, line function employees, and HR authorities. This is structured to attain convinced institutional objectives directed by convinced specialised principled procedures, considered to ensure proficient behavior and a combined process that mostly comprises activities such as integrated planning, management of specific outcomes, and enhancement of institutional performance.

Daley, (2012) and Hamid , (2014), reported that HR functions are governed by standards as is the case in various organisational operations. There are diverse sentiments and perspectives on the meaning of `Human Resource Management in State-owned Agencies'. However, in this study, State-owned Agencies' Human Resource Information System is viewed as a field of study, theory, and practice that is taken to be a portion of management. It is concerned with decision-making, principles, strategies, operations, practices, functions, activities, methods, and procedures related to employees in state institutions (Nguyen & Mujtaba, 2011; Sutiyono, 2007; Robbins *et al.,* 2013).

Human Resource Information System also includes the dimensions connected to people in their work, and the subtleties that flow from them, all aimed at helping to ensure uninterrupted institutional success through 'good fit' occupation relationships in tempestuous and ever-changing eco-friendly circumstances (Mishra & Akman, 2010; Robbins *et al.,* 2013).

The viewpoint taken is thus wide-ranging rather than contracted, in that Human Resource Management in State-owned Agencies is viewed as referring to all practices and decisions aimed at uninterruptedly attaining an optimal match or fit between work and the Human Resources obligatory to implement the work within a government recognised background and atmosphere.

1.3.3 Study Location - South African State-owned Agencies

This study, exploring and explaining the use of Human Resource Information Systems, was conducted in South African State-owned Agencies (SOAs). There are challenges when implementing, maintaining, and using HRIS.

A Ten Year Review by the Presidency, (2015), indicates that there are shortage of skill levels, as a results, SOAs do not have proper structures that are supported by sufficient Human resources. The lack of proper teamwork and staff coordination has a negative impact on the benefits expected to be derived from the use of the HRIS. An assessment

conducted in 2005 by the Forum for South African Director-Generals (FOSAD) also identified poor practices in SOAs organisational design within departments.

The performance of institutes in terms of HRIS implementation is also founded on the level of data quality (Tetteh & Uzochukwu, 2014). Poor data quality has a destructive effect on the company's productivity. Incorrect data captured into the system, for instance, could have a bad influence on the employees' salaries and other benefits paid to them. The volume of data and the data capturers not accepting the HRIS could lead to poor data quality in the system (Chen, 2014).

Human Resource Management must be reinforced by appropriate Human Resource Information Management (HRIM) systems. This must permit departments to have a credible information base from which to support their company structures, forecast their Human Resource needs, and maintain proper databases for the management of Human resources (Chen, 2014).

1.3.4 Inadequate literature addressing HRIS in South African State-owned Agencies

Information Systems literature lacks studies that focus on acceptance and use of HRIS and therefore there was a need to conduct the present study (Rose & Fogarty, 2010). The need for this study arises from the fact that studies on HRIS were carried out mostly in developed countries (Monks *et al.,* 2013; Adams *et al.,* 2017; Beamond *et al.*, 2016). The literature also indicates that most of these studies have been from the perspective of reducing cost (Chang *et al.,* 2013). The systematic literature review was conducted to shed light on the following research knowledge gaps discussed here.

There is a need to understand the acceptance and use of HRIS, and subsequently what could influence its effective use. There is inadequate literature addressing what influences Human Resource practitioner's acceptance and use of HRIS, especially in the context of a developing country. This presented an opportunity for this study. This allows the study to contribute to the body of knowledge by presenting a model specific to the State-owned agencies' individual use of HRIS.

Effective use of HRIS has been studied from the perspective of reducing cost, so there is a greater need to study HRIS use and subsequent effective use. In so doing, this study goes further by addressing how HRIS use could metamorphose into effective use, which is also absent in the existing literature. Most companies that instigated HRIS specify that the system is multifarious (Bhargava, 2014). The intricacy of an HRIS is posed as a negative effect on the implementation and use of the system (Alalwan, 2014).

Difficulty affects innovation when using the system as employees find the system complex to comprehend (Ahmer, 2013). Marufu, (2014) cited that the under-utilisation of the system is a perilous problem and is often initiated by users who do not know how the system works. Additionally, the putting into practice, use, and level of maintenance of the system is indomitable by the size of the company (Slavić & Berber, 2013).

The size of a company also subsidises the effective use of the system (Ball, 2001) and could be part of the details why institutes are not exploiting the use of the system, which is great anxiety. Sarker, (2014) stated that there must be an association between the size of an organisation and HR practice in the practice of the HRIS.

This is necessary so that the progression of the organisation is aided by the system to choose the right abilities needed to enhance managerial performance. Many companies with HRIS disregard positioning the obligatory resources to accomplish it, divesting the users and the companies of achieving the paybacks it offers (Arora, 2013).

1.1.1.1 Problem Statement

Despite emphasis from the literature on how HRIS can help improve Human Resource service delivery, the acceptance and the use of HRIS is still a key issue in Information Systems (IS) business leadership. IS leaders are grappling with ways to use HRIS effectively. The problem is that currently, the South African state-owned agencies have invested in human resource information systems; however, to what extent the systems are used and what influences their use by individuals was not yet known.There was no known study and literature that addressed this knowledge gap, leaving the agencies with

no way of knowing what ought to be done to achieve the HRIS effective use. To this point, this thesis explains what influences individuals to use and subsequently to use HRIS effectively.

The argument driving the study is that although SOAs invest heavily in technologies to enable their work and performance, the extent of use and effective use of Human Resource Information Systems is not well understood. There is a need to explain what factors influence the use so that the return on investment is realised through effectively using the HRIS.

1.1.1.2 Study Goal and Objectives

The study goal was to conceptualise a model for effective use of Human Resource Information Systems in South African State-owned Agencies. This would be achieved through the following study objectives:

1) To explain individuals' acceptance and actual use of Human Resource Information Systems in South African State-owned Agencies.
2) To explore factors which better explain the effective use of Human Resource Information Systems by individuals in South African State-owned Agencies.
3) To identify the factors that are significant in predicting the effective use of Human Resource Information Systems.
4) To determine ways in which Human Resource Information Systems can be effectively used by individuals in South African State-owned Agencies.

1.1.1.3 Primary Research Question

Why are Human Resource Iinformation Systems not effectively used by individuals in South African State-owned Agencies?

Secondary Research Questions

1) What is the acceptance and actual use of Human Resource Information Systems by individuals, in South African State-owned Agencies?
2) What factors explain the effective use of Human Resource Information Systems by individuals in South African State-owned Agencies?
3) What factors are significant in predicting the effective use of Human Resource Information Systems?
4) In what ways can Human Resource Information Systems be effectively used by individuals in South African State-owned Agencies?

1.1.1.4 Study Delineation

This thesis focuses on acceptance and use behaviors. It does not focus on studying the actual information system implemented. The study did not focus on the outcome of use or non-use, performance, and productivity, either.

1.4 THESIS STRUCTURE

Chapter 1 introduces the research topic and study. It deals with use and effective use of Human Resource Information Systems'., this has proceeded with the definition of key terms used in the study. In the background of the research problem, challenges in Human Resource service delivery and the role of HRIS were discussed.

In the chapter, a discussion on the context of the state-owned angencies and the inadequacy of literature on HRIS in developing countries was introduced. The relevance of the study was discussed. The following were also discussed: the relevance of the study to Information Systems theory, the relevance of the study to Information Systems literature, and the relevance of the study to context. The problem statement was given

thereafter and then the purpose of the study was stated next. The goal, research objectives, and research questions were provided.

Chapter 2 presents a scholarship survey on the effective use of Human Resource Information Systems is provided. The result of the literature survey is explained based on the acceptance and use of HRIS pertinent to HR service delivery and administration. A discussion on the role of HRIS follows focusing on HR service delivery. The individual use of HRIS and factors affecting the individual's acceptance and use thereof are further explained.

Chapter 3 reviews and discusses theories applied in this study based on the acceptance and use of HRIS. Each theory is introduced, elaborated upon, and motivated for its application. The conceptual research model for use of HRIS is developed. The model operationalisation is further presented.

The steps taken to achieve the objectives of this study are presented in **Chapter 4**. It starts with a description of the ontology and epistemology, research philosophy, research approach, research strategy, and the research design. The sampling procedure, data collection, and data analysis applied in this chapter are further discussed. Ethical considerations and the chapter summary wrap up the discussion in this chapter.

Chapter 5 presents the results of the data analysis, having applied Smart Partial Least Squares version 3.0 as the statistical analytical tool. A discussion of the outcomes of those factors which contribute to the effective use of HRIS by HR users is articulated in **Chapter 6**. Finally, **Chapter 7** summarises the entire thesis. Furthermore, contributions to the study, recommendations, and further research required are documented.

CHAPTER 2: SURVEY OF SCHOLARSHIP AND THEORETICAL FOUNDATIONS

2.1 PRELUDE

This chapter surveys the scholarship by reviewing the literature on concepts that give foundation to the study. Individuals in the workplace struggle in combining HR activities and HRIS to deliver human resource service effectively. HRIS, therefore as a program assists an individual's in the use of this technology for Human Resource service delivery, processing, analysing, and dissemination of the information about the Human Resource status of the population (Troshani *et al*., 2011). The HRIS application provides the necessary information to Human Resource professionals, decision-makers, and managers, involved in the provision of Human Resource service delivery.

The need for this present study arose from the fact that studies on Human Resource Information Systems were carried out mostly in developed countries (Monks*et al.*, 2013; Dobalian *et al.*, 2012; Scott, 2010; Ure *et al.*, 2009). The literature indicates that most of these studies have been from the perspective of costs (Curcin *et al.*, 2014; Chorbev *et al.*, 2011; Sadri, 2011; Ellingsen & Røed, 2010; Kailasam *et al.*, 2010). This study, therefore, explores HRIS literature and then proposes an outline for research to investigate the effective use of HRIS by individuals in developing countries.

This chapter is outlined as follows: firstly, the literature search; the strategy for the retrieval of related literature is carried out. Secondly, the retrieved literature was categorised and discussed. This section is followed by a discussion on the role of Human Resource Information Systems in Human Resource service delivery. The fifth section of this chapter discusses an individual's use of Human Resource Information Systems, followed by the factors affecting an individual's use of Human Resource Information Systems.

2.2 HOW THE LITERATURE REVIEW WAS CONDUCTED

This study employed a Systematic Literature Review (SLR) which ensures effective retrieval of relevant literature. An SLR can be defined as, “a systematic literature review comprising a research technique which collects empirical evidence specific to a study field, in order to critically assess and derive conclusions which summarises the research” (Fernández-Alemán *et al.,* 2013). The objective of SLR is not only to collect empirical evidence relevant to a research question, but also to support the development of guidelines, for retrieving relevant literature (Fernández-Alemán *et al.,* 2013)

2.2.1 Database and Eligibility Criteria

Extensive searches of literature were carried out on academic databases starting February 2017, when the study was first conceptualised and proposed. Several research articles were reviewed through e-HRM studies in a systematic and scientific manner. The review studies are classified into (1) Theoretical perspectives, (2) Methodological approaches (3) Levels of analysis and (4) Topics and findings. Further studies on topics and findings reviewed by the researcher were divided into (1) Context, (2) Actors, (3) Strategy, (4) Activities, (5) Technology, and (6) Consequences.

A systematic literature review was conducted using varied electronic academic databases commencing in February 2017, to inform the study. The search includes the academic database of the Association of Computing Machines (ACM), Association for Information Systems (AIS), PubMed, and Wiley Inter-Science.

Table 2-1 summarises the systematic literature review using the name of the authors and the year of publication. It presents the studies in the area of Human Resources Information Systems and the table shows the author’s detail and the year of their publication. The table also describes the problems the literature discusses, the design of the study, the country where the study was done and finally the outcome of the studies was also discussed.

In summarising the table, it is evident that there are not many studies conducted within the developing countries. Additionally, the table shows a lack of studies focusing on the use and effective use of HRIS.

Table 2-1: Survey of Related Studies on Human Resource Information Systems.

E-HRM Review Aspects	Author
Theoretical approaches	Dineen *et al.,* (2002), Coppola & Myre, (2002), Harris *et al.,* (2003), Cober *et al.,* (2003), Williamson *et al*., (2003), Gardner *et al.,* (2003), Nissen & Gates, (2004), Elgin & Clapham, (2004), Jin *et al.* (2004), Huang *et al.,*(2004), Ruta (2005).
Methodological Approaches	Kinnie & Arthure, (1998); Kuha & Ikuterud, (2000); West & Berman, (2001); Coppola & Myre, (2002); Jattuso & Sinar, (2003); Wiechmann & Ryan, (2003); Chapman & Webster (2003); Harris, *et al.,* (2003); Anderjs, (2003), Welle-strand & Thune, (2003); Braddy *et al.,* (2003); Konradt & Joder, (2003); Turetken & Demirors, (2004); Dineen *et al.,* (2004), Jin, *et al.* (2004), Vaughan & Macvicor, (2004).
Levels of analysis	Klein *et al.,* (1994); Coppola & Myre, (2002); Harris *et al.*(2003) ; Yang *et al.,* (2004); Buckley *et al.,* (2004); Hawking *et al.,* (2004).
Topic and funding	Ruel *et al.* (2004)
Context	Hannon *et al.,* (1996); Elliott & Tevavichulada (1999); Ball, (2001); Teo *et al.,* (2007) ; Harris *et al.,* (2003) ; Hausdorf & Duncan, (2004); Ruel, *et al.,* (2004); Ruta (2005).
Actors	Memanus & Ferguson (2003); Buckley *et al.,* (2004).
Strategy	Liff (1997); Tansley & Watson, (2000); Cober *et al.,* (2000); West & Berman, (2001), Tansley *et al., (*2001), Beamish *et al.,* (2002); Welle-strand & Thune (2003); Chapman & Webster, (2003); Ruel *et al.,* (2004); Ruta (2005).
Activities	Kinnie & Arthurs, (1996) Lin, (1997), Baker *et al.,* (1998); Elliott and Tevavichulada, (1999); Kuhn and Skuterud, (2000); Ball (2001); Teo *et al.,* (2007), Pearce and Tuten, (2001), West and Brman, (2001); Chapman and Webster, (2003), Hausdonf and Duncan, (2004).
Technology	Hannon *et al.*(1996); Baker et.al (1998); Elliot and Tevavichulada, (1999); Cober *et al.* (2000); Kuong *et al.,* (2002); Smyth *et al.,* (2002); Konradt *et al.,* (2003) ; Garder *et al.* (2003); Hawkinbg *et al.,* (2004); Li *et al.,* (2004), Turekar and Demirors, (2004); Cober *et al.* (2004).
Individual Consequences	Eddy *et al.,* (1999); Ro Zelle & Landis,(2002); Zusman & Zandis, (2002); Dineen *et al.* (2002); Van Rooy *et al.,* (2003); Braddy *et al.,* (2003); Cober *et al.* (2003); Sinar *et al.,* (2003); Williamson *et al.* (2003), Weiechmann & Ryan, (2003); Salgado & Moscoso (2003); Harris *et al.* (2003); Payton, (2003); Howking *et al.* (2004); Elgin & Clapham (2004); Dinnen *et al.,* (2004) ; Jin *et al.,* (2004); Ruta, (2005).
Operational Consequences	Baker *et al.* (1998); Hogler *et al.,* (1998); Pearce & Tuten, (2001); Capelli, (2001); Beamish *et al.* (2002), Klass (2002), Coppola & Myre, (2002); Gardner *et al.* (2003), Chapman & Webster, (2003), Memanus & Ferguson, (2003); Salgodo & Mocoso, (2003); Howking *et al.* (2004) ; Ruel *et al.,*

E-HRM Review Aspects	Author
	(2004) ; Backley *et al.,* (2004); Nissen & Gates, (2004); Macpherson *et al.,* (2004); Vaughan & Macvican, (2004); Ruta, (2005).
Rational consequences	Hannon *et al.* (1996) ; Gardner *et al.* (2003); Ruel *et al.* (2004); Tixiar (2004).
Transformational	Hannon *et al.* (1996); Liff (1997); Barney & Wright, (1998); Tansley *et al.* (2001) ; Teo *et al.* (2007) ; Gardner *et al.* (2003) ; Rueal *et al.* (2004) ; Ruta (2005).

2.3 HUMAN RESOURCES

2.3.1 Human Resource Management

HRM can be defined as "all activities associated with the management of people in firms" (Thompson, 2016). HR practice is commonly termed "people management" (e.g. recruitment and selection, employee training and involvement) and are intended to add value for the benefit of the institute. Accordingly, the HRM-performance research stream is mainly aimed at gathering confirmation of this added value.

The value of HRM is apparent from more than 20 years of research. In their meta-analysis, Van der Westhuizen &Wessels. (2010) demonstrated that the performance of each standardised unit in HRM can be increased by 0.20 percent. Therefore, the HRM-performance relationship is both significant and relevant to management. The traditional concept was that the presence of HRM drove performance. However, if HRM is poorly implemented, it may never achieve its anticipated outcome, signifying that the mere presence of HRM as such may not be sufficient (Edgar & Geare, 2005). As such, how well managers implement HRM is perhaps of similar or greater importance than its presence (Edgar & Geare, 2005).

HRM is hypothesised to fulfil employees' needs, which subsequently enhances favourable HRM outcomes (Edgar & Geare, 2005). This ultimately leads to increased organisational performance. In this perspective, need satisfaction is hypothesised to mediate the relationship between HRM and HRM outcomes. Deci and Ryan, (2000) are of the view that the three elements - autonomy, relatedness, and competence must be fulfilled in order to foster individual growth, well-being, and performance in diversified

domains an working environments. In addition, HRM underscores the treatment of employees like humans with an added personal touch (Carson, 2005; Truss et al., 1997).

This study argues that the individual talents, interests and expectations of individuals must be considered, when implementing HR practices, rather than simply acknowledging its presence. There is a clear distinction between HR presence and the quality of its implementation practice. The manner in which managers implement HR practices, therefore equally matters to employees.

This study argues that the individual talents, interests and expectations of individuals must be considered, when implementing HR practices, rather than simply acknowledging its presence. There is a clear distinction between HR presence and the quality of its implementation practice. The manner in which managers implement HR practices, therefore equally matters to employees.

The HRM concept has often been described as two distinct forms, i.e. soft and hard prescripts. The soft model stresses integration of HR policies and business objectives. Yet, it raises the significance of treating employees as values assets, and as a strategic competitive advantage. Strategic competitive advantage is achieved through their commitment, adaptability, skill and performance. Employees provide proactive and not passive production input. This promotes development capacity, trust, and collaboration through participation (Legge, 2013).

The soft model contrasted with the hard model, places emphasis on “human” and associated with the Herberg and McGregor human relations school of thought (Storey, 1987). The hard HRM model places emphasis on qualitative, calculative, and business-strategic aspects in managing “headcount”. This has been termed ‘human asset accounting’ (Storey, 1987).

The hard HRM approach has affinity with scientific management. Employees are reduced to passive objects and not valued by the organisation. They are assessed on their ability to provide the skills and attributes required by the organisation (Legge, 2013; Vaughan, 1994; Storey, 1987; Drucker *et al.,* 1996; Keenoy, 1990).

2.3.2 Human Resource Practices

HRM is predicated upon several theories. Four popular HRM theoretical frameworks are chiefly applied in this study. These theories comprise the Resource-based View, Ability View, Motivation View, and Opportunity View theories. All of these theories which essentially links HRM to organisational performance.

Concepts from organisational economics (Penrose, 1959) and strategic management (Barney, 1991) are integrated into the Resource-Based View (RBV) theory. HRM delivers value add by leveraging the organisation's rare, valuable, hard to copy, and difficult to substitute human capital.

RBV hypothesis that competitive strategic advantage no longer lies in the exploitation of natural resources, technology, or economies of scale, but instead valuable, rare, costly and hard-to-imitate resources which are inherent in human capital (Kamoche, 1996). HRM value lies in ensuring the organisation's human capital meet or exceed these criteria.

A wide variety of HRM practices have been identified by researchers over the years. Such practices were referred to as *best practice/high performance* (Huselid, 1995); *sophisticated* (Golhar & Deshpande, 1997; Hornsby & Kuratko, 1990; Goss *et al.*, 1994; Wagner, 1998); and professional (Gnan & Songini, 2003; Matlay, 1999) respectively. Pfeffer, (1994) on the other hand, argues the "best HRM practices" is considered the more appropriate term. Chandler & McEvoy, (2000), however questions whether there is a single set of policies or practices that that can universally manage people effectively.

HRM practices can be defined as the activities required to manage the pool of Human Resources and that such resources are optimally positioned to fulfil the organisation's goals (Schuler & Jackson, 1987; Wright & Snell, 1998). Most research studies define HRM in terms of HR practices, systems, or bundles of practices.

The literature does not provide a definitive list of HR practices or systems which define HRM. The impact of HRM on organisations have highlighted three perspectives. Boxall and Purcell, (2008) raises the universalistic perspective, which comprises a bundle

of high performance “best practices”, which enhances organisational performance. This approach infers that business strategies and HRM policies, are mutually independent in determining organisational performance (Katou & Budwar, 2007).

The relationship between HR practices and profitability were analysed in a sample of US Banks (Delarey & Doty, 1996). Their study concluded that there is a positive correlation between HR practices and profitability, whilst testing universalistic, contingency and configurationally HRM practices. Ahmad & Schroeder, (2003) asserts that there is a positive correlation between HRM practices and operational performance.

HRM practices include information sharing, extensive training, selective hiring, compensation and incentives, status differences, employment security and decentralisation and use of teams. Whilst operational performance include among other - quality, cost reduction, flexibility and commitment. Research had been conducted with respect to HRM practices which significantly contributes to organisational performance.

A study undertaken by Delerey and Doty, (1996) investigated the relationship between HR practice and organisation profitability in a sample taken of banks in the United States. Their study confirmed HR practices positively correlate with increased profitability, while testing universalistic, contingency and configurationally approaches to HRM.
In a separate study conducted by Ahmad & Schroeder, (2003), found that a positive relationship exists between HRM and organisational performance. These HRM factors comprised information sharing, extensive training, selective hiring, compensation and incentives, status differences, employment security and decentralisation and use of teams.

The effect of Human Resources on the development of enterprises are lamented by (Himmelberg, 2002; Coles *et al.,* 2003). They are collectively of the view that HRS and practices hugely assist in managing organisations (Lavie, 2006). This could lead to more investment, organisational growth, improved resource employment, and enhanced operational performance.

This is achieved through better business management which ultimately creates wealth.

Such practices have also been found to reduce the risks associated with skills shortages, improve stakeholder relations, which collectively harmonises labour and social relationships.

The significant role which HR plays in enterprise development has been highlighted in the literature (Lavie, 2006). Lavie, (2006), demonstrated that a good HR systems and practices, enhance the effective management of enterprises. This has many advantages such as greater investment, company growth, resource employment, improved operational performance, and based on improved business management .This in turn leads to increased business wealth.

These HR practices and systems similarly reduces the risk of a skills crisis, improve internal and external stakeholder relationships (Lockett *et al.,* 2009). These factors collectively harmonise labour and social relationships, notwithstanding other areas of significance in the enterprise.

It has been determined that the acceptance of specific groups of HRM practices can impact firm performance by making critical associations or to discount performance when certain consolidation of practices are unintentionally set in the mix (Wagar & Rondeau, 2006). Innovative firms treat HRM processes as an organisation's strategy to support group duties, upgrade firm culture, and develop client relations through cooperation and capacitation (Muriithi *et al.,* 2014).

2.3.3 Human Resource Information Systems

HRIS usage is normally determined by the size of the organisation, the modules adopted, and the required analysis of information. Core modules like personnel administration, often supersedes others, such as training and administration. It is common knowledge that new HRIS users more often than not, adopt low-cost solutions. Smaller organisations typically develop in-house databases when initially adopting HRIS (Houghton, 2011).

Kavanagh, (2009) similarly observed that smaller organisations procure low-cost and

low-risk HRIS with additional software which is more adaptable for in-house HRIS development. The literature confirms that HRIS users who adopt additional software, are more likely undertake in-house HRIS development. Studies have further shown that mostly smaller organisations were using additional HRIS software, and more than half of the sample, adopted training and recruitment modules.

HRIS furthermore defines the integration between HRM and IT. Kort and Strydom, (2014), Information Systems (IS) increases administrative efficiencies, and improved reports for effective decision-making. Research undertaken by Leitch, (2010), confirmed that the use and impact of HRIS on HRM professionals, differed marginally, between Small Medium Enterprises (SMEs) and large companies. It further confirmed that the use of HRIS for strategic collaboration also enhanced professional standing.

However, they issued a cautionary, stating that such professional standing, was not highly significant. For example, during semi-structured interview, senior executives remarked that HRIS had not significantly enhanced their professional standing, although they observed substantial HRIS usage, benefitted the company.

Armstrong & Taylor, (2020) investigated the diffusion of HRIS innovation between USA and non USA firms. The study confirmed a modest correlation between the acquired number of IT and HR-transaction automation supports the general call for more formalised HR-technology strategies at the firm level to coordinate purchasing and implementation decisions.

Rodwell & Teo, (2014) supported this argument. They investigated the impact of IT on Human Resources Management (HRM) training policies in Indian private companies. The study concluded that IS enhanced flexibility in managing learning times, trainer active participation, and development of control mechanisms required to ensure training effectiveness.

A study conducted by Kavanagh, (2009), indicate that HRM systems yield sustainable competitive advantage by establishing and developing knowledge-based resources. This is aligned to the conceptual framework developed and articulated in the literature.

Notwithstanding literature confirming linkages between HRMS, strategic organisational resources, and creation of sustained competitive advantage.

2.1.1.1 HRIS Overview

A Human Resource Information System (HRIS) can be defined as a "systematic procedure for collecting, storing, maintaining, retrieving and validating data needed by an organisation about its Human resources, personnel activities and organisation unit characteristics" (Aggarwal, & Kapoor, 2012; Walker, 1982; Shiri, 2012).

HRIS is instrumental in planning HRM managerial, executive, and regulatory processes (Desanctis, 1986; Wiblen *et al.,* 2010; Al-Shibly, 2011). HRIS can be simplistic such as payroll records and time cards of a small business. On the other hand it can be as sophisticated as computerised HR databases of major manufacturers, banks and governments (Wiblen *et al.,* 2010; Al- Shibly, 2011; Wiblen *et al.,* 2010; Al- Shibly, 2011).

HRIS offers a unique, centralised assessment of data when required by HRM or Human Capital Management (HCM) for implementing HR procedures, such as recruitment, placement, payroll management and other Human Resource practices (Fadairo, 2013; Al- Shibly, 2011). In the majority of environments, HRIS probably leads to more effective decision-making in HR. and as a result enables HR and consequently, facilitates more effective time management in executing the administration of Human Resources.

The decisions made should also increase in quality and as a result, the productivity of both employees and managers should become more effective (Ball, 2011; Al- Shibly, 2011). In other words, HRIS could be considered as a means of accomplishing various goals through the use of software, such as solutions in training, payroll, and recruiting. HRIS has the benefit of enabling organisations to plan HR costs effectively, manage and control these. This is conservatively done, without over allocating resources.

2.1.1.2 HRIS Functions

Any functional HRIS must have the capability of establishing an Information System (IS) that assimilates policies and procedures. This is required in order to effectively manage

the human capital of any organisation. Additionally, this is needed to operate computer hardware and software applications (Maier *et al.,* 2013). While information technology affects Human Resource (HR) practices (Bal *et al.,* 2012; Aggarwal & Kapoor, 2012), HRIS and HRIS administration comprise a distinct supporting function within HR. Some of the HRIS functions include the following below.

2.1.1.3 HRIS Use

Cost savings derived from automated employment recruiting and screening system for temporary professional employees were investigated in a case study undertaken (Buckley *et al.,* 2004). The results confirmed conservative savings given reduced employee turnover, staffing costs, and improved recruitment processing efficiencies.

Further research was conducted to evaluate cumulative savings on investments attributed to the use of HRIS. Gardner *et al.,* (2003), in their study called virtual HR, investigated the impact of IT on HR professionals. Investigations looked at the influence of IT on jobs restricted to a specific segment, i.e. Human Resources (HR).

The study revealed that extensive use of IT-enabled HR professionals, had more information autonomy as a result HR professionals spent more time on IT support activities. Furthermore, functional specialists reported increased time demands for transformational activities and IT support activities. Results also supported the theorised impact inferring that more IT and HR tasks should be further automated.

Ekhsan & Othman, (2009) argues that the use of technology on its own, is not enough, to enable experts to share knowledge with others effectively. Employees are therefore not eager to acquire knowledge. Dimba & K'Obonyo (2009) examined the move towards HRM-style practices in organisations. They developed HRIS as a framework that enables a break from the past. They found that the introduction of ERP HR system could potentially present a stimulus which affects change required in employee management practices.

Kavanagh, (2009) emphasises that HRIS is costly and requires careful planning and intense investigation of the critical success factors. Olachipo & Abdulkadir, (2011) in support of the aforementioned, contends that the size of the company further has an impact on achieving HRIS implementation benefits. Successful HRIS implementation, again warrants top management support. The aforementioned finding is supported by a study dealing with barriers to implementing HRIS (Beckers & Bsat, 2002; Kovach & Cathcart, 1999).

The integration of HRM and IT provides organisations the competitive advantage. This has attracted many HR professionals and managers. HRIS uptake and utilisation have markedly increased in organisations of varying sizes given its strategic capability in HRM (Absar *et al.,* 2011).

2.1.1.4 HRIS Use in Developed Countries

Extensive literature is available on HRIS studies. however, most of these studies were mostly theoretical (Ngai & Wat, 2006). In addition, most of these studies were conducted in organisations located in developed countries. Ngai and Wat, (2006) conducted a survey of the implementation of HRIS in organisations located in Hong Kong. They found that advantages associated with the implementation of HRIS was the quick response time and ease of access to information. Contrary to this, the greatest barrier was the lack of financial support.

Martinson, (1994) conducted a study comparing the degree and level of sophistication in the use of IT contrasting conditions in Canada and Hong Kong. The study revealed that the use of HRIS was less widespread in Hong Kong than Canada. By contrast, IT applied in HRM, was more widely applied in Hong Kong as opposed to Canada. Ball, (2001) conducted a survey in the UK to investigate the use of HRIS in smaller local organisations. The study found that smaller organisations were less likely to use HRIS.

Burbach and Dundon, (2005) conducted a study in organisation based in Ireland. The study investigated the strategic potential of HRIS to facilitate management. The sample comprised 520 local organisations. There findings concluded that large foreign-owned

companies readily adopt HRIS, while smaller Irish companies did not. HRIS technologies were also used for administrative purposes, as opposed to strategic decision making.

Delorme and Arcand, (2010) conducted a more recent study where they investigated the roles and responsibilities of HR practitioners transitioning from the traditional to a more strategic role. The study also highlighted that the introduction of new technologies in organisations, affect the way in which HR professionals achieve their tasks in HR department, and throughout the rest of the organisation.

Krishnan and Singh, (2006) similarly undertook a survey of nine local Indian companies that have implemented HRIS. This study revealed that the key challenges were a lack of HRIS knowledge and importance assigned to HR departments within these companies. In addition, the lack of cooperation across functions and divisions were similarly a key challenge.

Literature confirms that several studies have been undertaken globally, to determine the status, application, and implementation of HRIS (Jahan, 2014). However, few research have been conducted to examine the benefits and barriers of HRIS implementation (Dewenter & Malatesta, 2001). Moreover, few such studies have been undertaken in organisations located in the Middle East. This study is timely and of significance, since it examines the status of HRIS in state-owned organisations specifically, where no previous studies were conducted previously.

2.3.4 HRIS Technology Use

Investigating and comprehending how employees can effectively utilise HRIS to improve HR service delivery it of crucial importance. Especially in light of the uptake of HR technology to improve service delivery offered by HR practitioners. With the advent of the Strategic Human Resource Management approach, there was a greater need for HR information. HR practitioners were therefore compelled to innovate by increasing IT innovation and utilisation.

According to Ball, (2001), this has resulted in the HR/personnel department taking on new roles as an information center; internal consultant; changing agent; service provider; cost manager; business partner; facilitator; and consultant. Hall and Torrington, (1998) contends that regardless of some contradictory evidence, there is an increasing shift in strategic influence of HRM and continued shift of HR practices to the line (IES/IPD, 1997). The role of HRIS in optimising the HR department therefore becomes increasingly important to the organisation (Ball, 2001).

Ball, (2001) contends that the literature confirms substantial variance in the analysis of HRIS usage with at least two extremes of use. Kovach and Cathcart, (1999); Kovach *et al.,* (2002), mentioned that the HRIS information is highly useful for administrative purposes, while reducing costs and time. HRIS information further supports analytical decision making.

Martinson, (1994) identified different types of HRIS uses, based on its degree of sophistication. He classifies payroll and benefits administration along with electronic employee and absence records as unsophisticated HRIS systems. He further refers to these as simple-minded automation. Martinson, (1994) classifies the use of HRIS beneficial for recruitment and selection; Training and Development (T&D); HR planning and performance appraisals. He refers to these functions as sophisticated since the information which is generated, can be used to provide support important HRM decisions.

Nagai and Wat, (2006) argues that organisations are reluctant to adopt HRIS, unless they are convinced of its benefits. HRIS has several benefits, which includes *inter alia* improved accuracy, quick and timely access to information, and cost savings (Teze, 1973; Will & Hammond, 1981; Lederer, 1984; Ngai & Wat, 2006). Beckers and Bsat, (2002) furthermore lists five reasons why organisations should adopt the use of HRIS.

Reasons that can be advanced for these are increased competitiveness through enhancing HR procedures and activities; producing HRM reports; transitioning the role of HRM from transactions to HRM; and reengineering the entire organisational HRM function. Kundu et al., (2007) further advocates that HRIS supports strategic decision-

making; evaluates programmes and policies; and supports daily operations (Kundu *et al.,* 2007).

Rawat, (2008), indicated that the efficiency and effectiveness of HRIS implementation in universities, can enable one to profile the strengths and weaknesses of staff. This tool facilitates effective training, development, and recruitment of staff. The tool promotes correct placement of staff. This improves the quality of HRM and personnel management. He further contends that higher education institutions are confronted by the need to improve the learning environment, notwithstanding reduced administration and operational costs. More importantly, the integration of HR data and student information is essential for effectively budgeting, in order to manage different types of employees, recruiting, and retaining skilled staff members (Wernerfelt, 2015).

With so many demands, higher education institutions require powerful business solutions that will enable effective student management, graduation, employment and financial data analysis. Rawat, (2008) therefore contends that the use of HRIS systems in higher education institutions, optimises resource utilisation, speed, compatibility, updateability, data accessibility and integration, privacy, and security.

2.1.1.5 HR Practitioner Use and Acceptance of HRIS

The benefits of an HRIS system is largely dependent on the user interface. There are essentially two types of HRIS users. The first entails HR personnel who manages the HR function. The second type involves the end users of the system. In this study, users are defined as individuals who perform HR tasks for organisational needs.

These tasks may include among other leave applications, updating personnel information, and retrieving personnel evaluations, among others. The literature identifies and elaborates upon several theories and frameworks, which conceptualises user acceptance. Two of these theories and frameworks include the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour. Although, the more relevant and reliable theory or framework, is known as the Technology Acceptance Model (TAM) (Davis *et al.,* 2010).

Conditions and attributes of user acceptance of technology, were best explained using the TAM model (Venkatesh & Davis, 2000). Improved TAM models are commonly known as TAM 2 (Venkatesh & Davis, 2000) and TAM 3 (Venkatesh & Bala, 2008). The improved Unified Theory of Acceptance is commonly known as the Unified Theory of Acceptance and Use of Technology (UTAUT)) (Venkatesh *et al.,* 2003). According to systems Venkatesh and Davis, (2000); Legris *et al*., (2003); Chuttur, (2009), the TAM proved to be successful in predicting user acceptance of new IT systems.

The actual use of a system is a behaviour of which the TRA Theory of Reasoned Action is useful in predicting (Davis, 1986; Chuttur, 2009). The TRA is said to influence one's attitude towards a given behaviour. Davis, (2010) by contrast examined only two beliefs which potentially influences the users' attitude towards utilising the system. These influences include perceived ease of use and perceived usefulness of the system. He maintains that these two constructs are sufficient to explain and predict the users' attitude towards the use of the particular system. In this context, perceived usefulness is "the belief that using a system would enhance job performance".

On the other hand, perceived ease of use is - "the belief that using the system would be free of physical and mental effort" (Davis et al., 2010). The literature confirms that these two belief constructs widely informs organisational research (Legris *et al.,* 2003; Davis et al., 2010; Goodwin, 1987; Gould *et al.,* 1991; Hill *et al.,* 1987). Davis et al., (2010) illustrated the correlation between perceived ease of use and perceived usefulness. It is essential to investigate and comprehend how HRIS can effectively be applied by individuals, to improve HR service delivery. More especially, when recognising the difficulties HR practitioners face, when adopting technologies which provide related services.

2.1.1.6 Technology Use and Acceptance Fostering Improved HR Service Delivery

IT application in HRM have since the 1990's grown rapidly. Shrivastava and Shaw, (2003) have done significant research on the impact of HRM. IT developments have

significantly changed the HR function within organisations over this period. These days, many organisations have adopted HRIS to support HR departments. HRIS enhances efficiencies, decision-making, and information sharing (Lengnick et al., 2003).

Chugh, (2014), these efficiencies typically reduce workload given the reduced amount of administrative tasks. HRIS enables HR managers to partake in strategic decisions, informed by real time information about the organisation's human talent (Lengnick *et al.,* 2003).

HRIS not only provides strategic information relevant to employment and retention strategies. It also merges HRIS data into overall organisational strategy. HRIS is an HR decision-making tool available to managers. Effective HRM allows organisations to perform calculations that impact the entire business.

Such calculations include among other health-care costs per employee, pay benefits as a percentage of operating expense, cost per recruitment, return on training, turnover rates and costs, time to fill positions, return on human capital invested, and human value added. De Sanctis, (1986) argues though, that the aforementioned calculations do not reduce any costs, associated with the HR function.

The above-mentioned areas can achieve huge cost savings in the event where current data is made available to decision-makers. HRIS is therefore considered useful in facilitating quality information availed for management decision-making. HRIS provides comprehensive reports and executive summaries to executive management. It brings about awareness that HR provides a competitive advantage.

HRIS enables HR professionals to execute their work more effectively (Broderick & Boudreau, 1992). Research further confirmed a positive correlation between HRM functions and total organisational output. HRM functions are correlated with improved financial and operational performance (Mina *et al.,* 2012).

Rosemond and Ernesticia (2011), argue that the effective implementation of suitable HR policies and processes, ultimately has a significant impact on organisational

performance. It is also argued that HRM is more effective where it best fits the business' strategy. HR practitioners now have increased capacity not only to gather more information, but to store and retrieve such information, both timeously and effectively. Studies have shown that HRIS has not only improved efficiencies in organisations, but also the effectiveness of management functions. HRIS improves HR performance by supplying relevant information, necessary to support the resolutions of HRM issues. This consequently increases the efficiency and effectiveness of HR exploiting limited available resources which is available for increased output, quality, while controlling and reducing costs (Hayajneh *et al.,* 2013).

The contributions of this study exceeds the traditional acceptance approach, typical of HRIS. It goes further by including social and behavioural patterns which human resources practitioners ideally evaluate. This study further investigates work practice compatibility and technical preparedness in SOAs in the event that they decide to accept HRIS. The study additionally investigates the integration between HR information and HRIS decision making by assessing technology acceptance and ICT human behavioural traits.

2.3.5 HR Practices in State owned Agencies

HR quality is essential for SOAs to effectively deliver on their mandate. HRM is therefore central to effective human capital management and issues affecting this vital resource is comprehensively addressed. HR issues commonly includes: compensation, recruitment and selection, performance management, organisational development, safety, wellness, HIV and AIDS, employee motivation, communication, administrative support, and training.

The State of the Public Service Report (PSC), (2013), undertook several research studies. They found that although HR policies seeking transformation of HRM in the public service and SOAs have been implemented, the level of progress to date was unacceptable. Human Resource practices essentially deals with HR administration services in organisational departments.

This function comprises the management of recruitment, and selection, compensation, conditions of service, HR personnel records' (Absar, 2011). The PSC, (2013) found that there was generally a lack of basic processes in compiling job descriptions, conducting job evaluations, and obtaining re-approval prior to placing job adverts in the media. This shear disregard for adhering to procedure compromises the selection process of public service and SOAs, subjecting them to legal challenges by aggrieved job applicants.

The HRM subject area has great breadth and depth, notwithstanding its level of complexity. A number of legislative frameworks and policies were enacted since the democratic dispensation adopted in 1994. It is however not evident, that the implementation of such policies and frameworks, impacted positively on HRM quality in the public service and SOAs. The PSC (2013) therefore prioritised the assessment of HRM in South African public service agencies.

The HR function is critically dependent on effective Management Information Systems, as well as accurate and reliable data. In virtually every PSC report discussing HR issues, data reliability derived HRIS, is raised as a key concern (The Presidency RSA, 2015). To this extent the Minister of Public Services and Administration in 2008 declared that Cabinet has endorsed a system "clean-up" strategy (The Presidency RSA, 2015). The Auditor-General was mandated to audit HR information and organisational structure systems/directives compliance.

Chinese SOAs have over the years managed to improve corporate governance systems. They have also posted improved return on equity (ROE), profit-cost ratio and inventory turnover (The Presidency RSA, 2015). SOE performance increases in China have resulted in them becoming formidable players in the Chinese economy.

SOAs have significantly contributed to the GDP. By contrast Zimbabwe's SOAs have perform dismally, and resultantly placed a strain on the fiscus. Budgets had to subsequently be set aside to bail out embattled SOAs.

SOAs should in fact post profits and declare dividends to the Government in a thriving economy. Zimbabwean SOAs typically have deficiencies in modern skills since

personnel have not kept abreast of modern Human Resources developments. Although refresher courses exist, current training equipment and methods are outdated, and fail to integrate efficient and effective business processes and standard work procedures. The transition from mechanised to automated technologies has evidenced the redundancy of seemingly experienced personnel in SOAs. This has led to bloating of the personnel complement, low productivity, increased business costs, resulting in loss making angencies.

2.3.6 General HR Management

Havadi *et al.,* (2016) highlighted that the effect of Human Resources in the development of an enterprise is vital. They pointed out that effective Human Resource systems and practices assist in the enhanced management of organisations. This, in turn, can lead to greater investment, organisational growth and resource employment, and improved operational performance through better business management which creates wealth.

The dissection of the above notion is paramount as it serves to underline the importance of HR in any business despite the digital drive which many scholars claim is threatening a great percentage of manual labour, as the human hand is deemed redundant in most cases. The crucial HR strategic area is achieving a balance in their approach to HR to ensure competitive advantage ultimately in whatever business objectives and strategy the business or SOA have.

Furthermore, it was noted that HR practices and resource systems reduce risks of skills crisis, and they improve relationships among all stakeholders, which are all factors that would assist in improving labour and social relationships as well as other areas of significance in an enterprise (Blout & Castleman, 2009).

It is paramount to elucidate the labour and social relationships in any enterprise as of grave importance in light of the psychological makeup of human beings and element of motivation and ability to ideate which is only offered by humans and not robots, hence the use of HRIS and use of technology in the HR systems requires careful strategic

consideration and implementation. Xia, (2015) denotes that in order to evaluate performance, SOAs need standards.

Aside from performance evaluation which is justification enough, setting HR standards improves the quality and consistency of HR practice, clarifies the value created by HRI management, focuses on better practice with timely revisions to practitioner guidance, clarifies definitions and evaluation metrics and measures, identifies sources of evidence for performance evaluation and establishes a sound platform for big data analytics (Hamid , 2014; Folger & Cropanzano, 1998; Daley, 2012).

From these assertions, one can look at how the industrial revolution helped first world countries succeed and build their nations into successful economies. Human Resources plays a pivotal role in the achievement of corporate and business strategies and implementation of business objectives.

There is no way that any business would succeed without some form of human labour practising HR duties that would ensure strategies and tactics are implemented accordingly for the success of the business. Competitive advantage is, therefore, a concept known to humans and HR alone can steer and pioneer the business towards the right direction through either a unique selling point or specialised way of operations through HR.

2.1.1.7 Standardisation of HR Practices

Senior executives from SOAs are expecting HRs to run their activities more like organisations with a watchful eye to the bottom line (Megginson & Netter, 2001; Chang, 2013; Botha, 2014). HR leadership are requested to develop measurable and relevant Key Performance Indicators (KPIs) to assess the effectiveness and efficiency of the operations. However, in the absence of standardised HR practices, KPIs cannot be used to chart and monitor improvements (Armstrong, 2011; Armstrong & Taylor, 2020). Consequently, SOAs and organisations across the world have transformed and standardised their HR processes.

Once this happens, they can begin establishing KPIs around these processes and measuring their improvements. As the old saying goes, “you can’t improve something unless you measure it” (Armstrong & Taylor, 2014). Ultimately the goal is to reduce the cost of running HR (Boys & Wilcock, 2014; Daley, 2012.).

Process standardisation is essential to facilitate comparison (Daley, 2012). Comparison is only possible when crafting relevant KPIs. Fair comparison cannot be achieved measuring similar or identical variables. Organisational efficiency can only be measured by crafting comparable, process-based, and well defined KPIs (Erasmus & Schenk, 2008; Daley, 2012).

Many organisations do not have efficient HR models, because they lack standardised HR processes. Consequently, the quest for more cost-efficient HR operations remains to be elusive. Case studies on HR standardisation, have shown great success in adopting HR Shared Services Organisations (SSOs). The efficient functioning of SSOs are highly dependent on HR process standardisation to achieve the desired cost savings which executive management aspires (Van Rensburg *et al.,* 2011; Nirmala & Faisal, 2016).

The absence of standardised HR process, can have a number of disadvantages. For example, it has the potential to increase the cost of rendering HR services. On the other hand, frustrations can be experienced by Line of Business (LOB), customers, and employees, and executive management, due to ineffective HR service delivery.

Other disadvantages include HR personnel’s inability to meet the conditions of their Service Level Agreements (SLAs), duplication of HR staff efforts and poor morale within the HR department. This can manifest at the local, region, and global level (Nirmala & Faisal, 2016). The lack of HR process standardisation has many adverse implications for organisations and SOAs (Boys & Wilcock, 2014; Van Rensburg *et al.,* 2011; Daley, 2012; Erasmus & Schenk, 2008).

These may include underutilisation of staff; varying perspective of global employee population; different HR process creates autonomous silos; consequently different data is used; different HR terminology and measurement is used to inform decision-making;

the organisation lacks indicative and comparable human resource KPIs; and inconsistent Service Level Agreements (SLAs) makes it difficult to assess HR performance.
These implications compounds the challenges which HR management are confronted by. These challenges manifest as poor service delivery and quality; inefficient and cumbersome processes; inability to effectively communicate with customers, employees, and senior executive management.

2.1.1.8 Standard HRM Practices in South Africa

The South African Board for People Practices (SABPP) was compiled and published in 2012. The SABPP is an HR management model premised upon South African conditions as illustrated in Figure 2-1There is a considerable body of published HR best practice.

The SABPP model draws upon such HR best practice, but essentially focuses on three levels of HR best practice:- strategic, functional operational, and measurement. This approach ascribes to the quality assurance framework, which requires preparation, implementation, review, and improvement.

The SABPP's national HR Competency Model is closely linked to HR management standards. The competency model and standards documents the requisite knowledge, skills and behaviours which HR practitioners must have, in order to execute their functions effectively.

Organisations can use these standards and model to evaluate its current HR practices against the published standards and competency model, to gauge compliance, identify gaps, and formulate appropriate action plans. Thereafter, they are able to review the current HR structure, define supporting roles, and develop role descriptions articulating the required competencies.

The SABPP HR System Standards Model, integrates the following quality management practices - planning, implementation, review and improvement. While the three standard components include - strategic HR-business alignment, functional and cross-functional HR value chains, and HR success management.

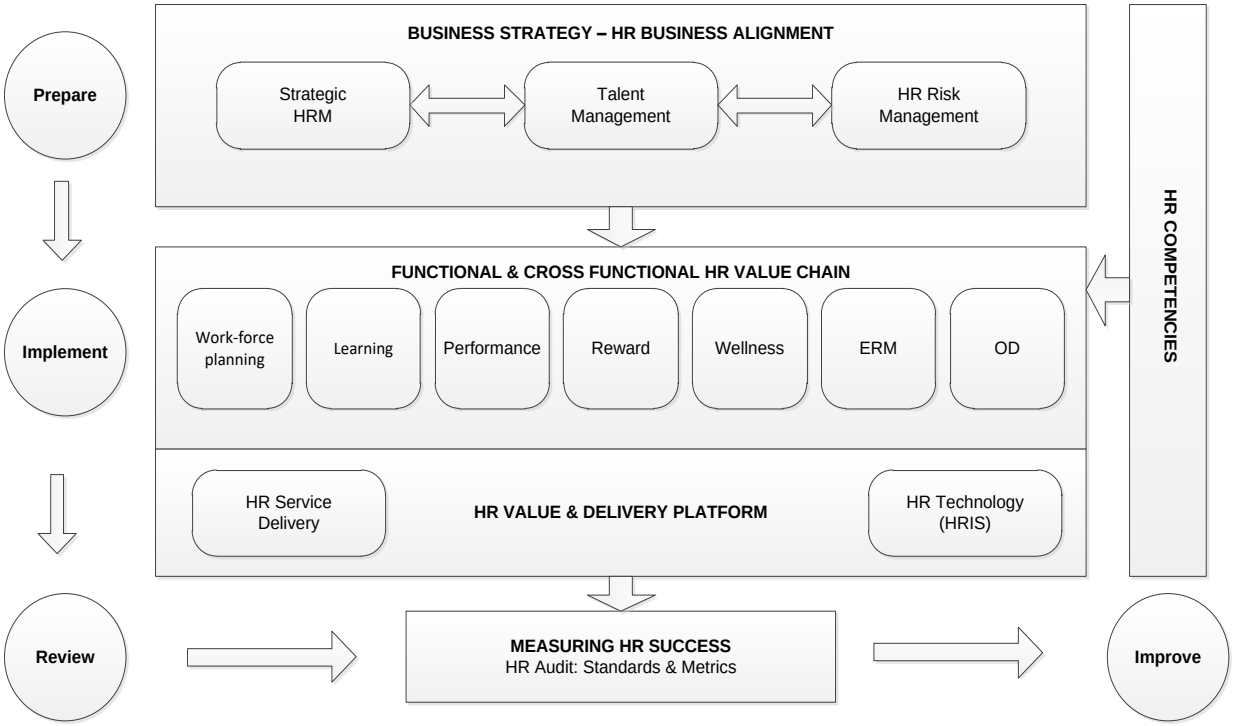

Figure 2-1: SABPP National HR Competency Model Source (Business Essentials, 2013).

2.1.1.9 Application of HRM Standards

A study conducted by Boys and Wilcock, (2014) cited that the HRM function has been ignored by national quality assurance experts, given that it is perceived to be "soft" associated with human behaviour. Following decades of research into the HRM function, it can be confirmed that this function, can have a radical impact on certain business outcome (Van Rensburg *et al.,* 2011; Aldaibat & Irtaimeh, 2012).

By way of an example, where employees are advised about how their work links to the strategic objectives of the business, notwithstanding measuring their work performance against standards, employees will evidently be motivated. Employees will ultimately experience greater satisfaction and feel they are part of the organisation or SOE.

In South Africa, various aspects of HRM are regulated by labour legislation. This is supported by the Codes of Good Practice issued by the Department of Labour

(Schutte *et al.,* 2016; Bondarouk *et al.,* 2011). Regrettably, this legislation and codes do not provide a useful management model to execute HR work. HR work differs considerably between organisations, both in South Africa and all over the world (Van Rensburg *et al.,* 2011; Botha, 2014). HR professional moving between jobs ideally have a great deal of familiarisation and vast experience with respect to various practices.

The lack of an HR management model has resulted in a lack of understanding HR as a profession compared to other disciplines. HR practitioners therefore do not have a "toolbox" to improve organisational functioning (Schutte *et al.,* 2016). Executives and line managers are persuaded that the introduction of HR practices are a good idea (Van Rensburg *et al.,* 2011). This research study provides a framework for standardising HR practices using HRIS in SOAs located in South Africa.

2.1.1.10 Benefits of Implementing HRM Standards

Literature outlines that during the implementation process of standards, considerable work is involved and enormous documentation tends to be generated (Boys & Wilcock, 2014; Mova & Kalvaitienė, 2015; Nirmala & Faisal, 2016.). There are other standards that inspire self-evaluation and deliberation, which minimises documentation.

Boys and Wilcock, (2014) contend that management standards are "strategic tools and guidelines" which help organisations address problems. This facilitate smooth operations and efficiencies, thus increasing productivity and penetrating new markets. Benefits typically include cost savings, international standards also help optimise operations.

This improves the bottom line, enhances customer satisfaction, helps to improve quality, increases sales, market share, while reducing production costs and increases productivity (Boys & Wilcock, 2014; Aldaibat & Irtaimeh, 2012). Therefore, in the execution of standards, a significant information administration feature is, therefore, that during this procedure, contained information becomes overt, public and can be reproduced (Armstrong & Taylor 2014; Boys & Wilcock 2014; Nirmala & Faisal, 2016).

2.3.7 Human Resource Management Technologies

Noe *et al.,* (2017) provides the following definition for HR technology as “any technology that can attract, hire, retain, and maintain, human resources, support HR administration, and optimise. The technology can therefore be used in different types of Human Resource Information Systems (HRIS), and various stakeholders, for such as managers, employees, and HR professionals. The technology can be evaluated in different ways.

The speed at which technology is able to gather, collate, and deliver information and communicate with employees is certainly well acknowledged. (Mishra & Akman, 2010). These benefits further include cost savings and a reduced administrative costs to HR departments. HR departments can therefore divert their time to meaningful activities. For example disseminating information to managers, so that they are able to take effective decisions. The literature shows that organisations are more effective when employing technology to perform HR functions.

It is noteworthy pointing out that not all organisations have the latest technology, and some do not require sophisticated technology. Although, all organisations require HR-related information. There is a wide difference in technology use for small organisations compared with large organisations having some 3000 employees. Small organisations can use simple Microsoft Word or Excel to keep basic employee data. Larger companies on the other hand, required to handle large volumes of data (Noe *et al.,* 2017).

This activity can be complex in the absence of sophisticated tool which can store and retrieve data. This is evident from the levels of sophistication required when analysing the evolutionary aspects of HR technology. The evolution of HR technology are divided into four stages (Paauwe, 2004) - (1) paper-based systems, (2) early personal computer (PC) technology, (3) electronic databases, and (4) web-based technology. Figure 2-2 illustrates the evolution of HR technologies.

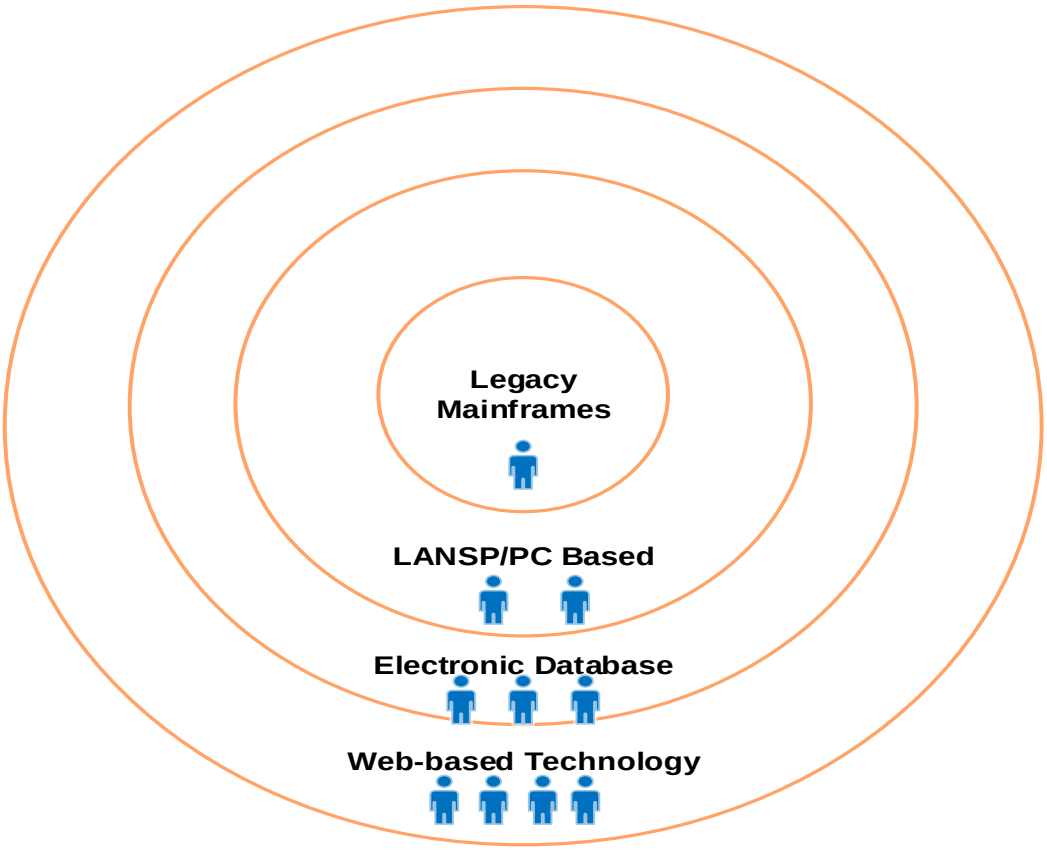

Figure 2-2: Evolution of HR Technology (Davis 1986).

2.1.1.11 Stage 1 Paper-based Systems

HR systems were traditionally paper-based. Such systems functioned in isolation of other business functions. Features were added time as and when required. Data was stored on mainframe computers. Reporting was very rudimentary and the data was exclusively owned by HR. managers would typically send employees to HR to resolve any enquiries.

2.1.1.12 Stage 2 Early Personal Computer Technology

Initially, information contained on paper-based systems were transferred to PC and onto Local Area Networks (LAN). Then HR databases could only produce “tombstone” data. Only basic employee information was available. Advances in databases comprised payroll and very rudimentary versions of employee tracking. HR data were stored on a client-server or server. Severs were high-powered and capable of managing disk drives (file servers), printers (print servers), and network traffic (network servers).

Client servers are PCs or workstations on which HR professionals can run software applications. Clients are dependent on resources, such as files; devices, such as printers; and even processing power.

For example, when sourcing information from Wikipedia, the user's computer and Web browser would be the client, while the computers, databases, and applications that compose Wikipedia would be the server. The Wikipedia server finds all related information about the enquiry, in the event that the users' web browser submits such an enquiry. HR still remained the exclusive custodians of the information and having access to the system.

2.1.1.13 Stage 3 Electronic Database Systems

The following stage commenced with the establishment of a relational database. A relational database can be defined as data which can be stored in a number of folders. Each file possess various types of data. Files can be linked such a manner that information from the different files can be used. Relational databases allows one to establish databases in different locations, while linking the information. Organisations can extract the data and generate complex reports, with the capability of integrating several data elements. By way of an example, reports can be produced by accessing different databases, and can include data such as name, address, salary, and benefit information.

The transition to electronic databases allows for integration of HR systems with other business related systems. Formidable HR departments started investing in enterprise-wide systems, which comprise HR-related modules too. Enterprise-wide systems can be defined as a system which supports cross-functional or enterprise wide requirements, instead of a single group or department in the company. SAP is a readily available enterprise-wide system.

At this juncture, the Internet was increasingly used. Managers considered what it could offer to improve HR technology. Although HR continued to own HR data, they began to transition into a more integral part of the business. This trend continued, as databases

gained increasing prominence. This empowered HR departments to produce quality reports, while providing meaningful information to managers.

Additionally, other functional areas could access information from the requisite databases. The organisation could for example communicate mass mailing to employees, when launching a new product or implementing organisational change. The data is easily retrievable from HR systems. At this juncture, HR fully embraced the digital world of electronics and termed this as “e-HR” began.

2.1.1.14 Stage 4 Web-based Technology

Currently, several companies have embraced HR technology. The benefits of automation is commonly known within HR as well as other areas of business. The automation of several transactions makes it possible to achieve better effectiveness and efficiencies.

Organisations widely use call centres and interactive voice response systems. An Interactive Voice Response (IVR) system is a telephone technology with touch-tone and can be deployed to interact with a database to retrieve information from it or inter data into it. Employees can call in to report their attendance by entering a specific code.

Web-based applications make use of a web browser as a user interface (called the “front-end”). The user can access such applications from any computer connected to the Internet using a secure password-protected login page. From this point onward the data is encrypted. The HR department remains the custodian of the data. However, others have realised the business value of this information. The level of HR reports have become more sophisticated. Presently, most IT systems are still not web-based, though some leading companies have already adopted such technology.

2.3.8 HR Future Technologies

Technology of the future would be underpinned by speedy access to current information and accessing information via multiple systems. This ability will enable organisations to gain a strategic edge. HR needs to diminish its role as sole custodian to HR information

and make this more available to managers and employees who can solve their problems using web-based enabled systems. This new approach will not likely lead to HR job losses.

The system allows HR professionals to transform information into knowledge that can be used for effective decision-making (Noe *et al.,* 2017). This facilitates the smooth working between HR and IT by leveraging technology. A recent study conducted by the Hackett Group (a business process advisory business), concluded that high performing organisations, spend 25% less than their peers on HR, given that they use technology more effectively (Wiblen et al., 2010)

2.3.9 Integrating HR Technologies

Developments in Information Technology have dramatically affected traditional HR functions in nearly every area. For example, with compensation, staffing, and training. This requires re-engineering of HR business processes (Garg, 2013; Aldaibat & Irtaimeh, 2012). Such changes have significantly affected HR professionals requiring a shift to online processes.

2.3.10 Increased Efficiencies

Speedy computer technologies have enabled more transactions to be completed using less resources. Such functions typically include payroll, flexible benefits administration, and health benefits processing (Chakraborty *et al,* 2013). Although earlier mainframe technologies provided efficiencies in these areas, record processing efficiencies previously available to large organisations, have now become readily available to organisations of any size (Ulrich, 2011).

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previously available to large organisations, have now become readily available to organisations of any size (Ulrich, 2011).

Computer technology is often used to enhance the accuracy of information or to simplify work processes. This is often necessary where large data sets have to be reconciled. Automated systems can remove the arduous task of manually reconciling large volumes of data with a high level of accuracy. For example, pension and profit sharing applications, benefits administration, and employee activities.

The use of computer technologies improves results accuracy, simplifies processes, and takes less time than manual processing. Most HR functions have been automated to gain both efficiencies and effectiveness (Collis & Hussey, 2013).

2.3.11 IT Enabled Processes

Although there may be application gains through increased effectiveness and efficiencies over manual processing, some activities can only be achieved by deploying ultra-modern technology. Computer-based (web-based) training is increasingly advancing as growing area of HR practices. This was not available until relevant computer software was developed.

Computer-based training was not well established back then, as it is currently. The reason for this was that computer-based training it was geographically, till such a time that training was made available online and not restricted to computer-based application.

Organisations have created a powerful tool by upgrading and assessing employee skill sets, by allowing them to access online training portals. Many other traditional HR functions have involved IT-dependent components with the use of the Internet. IT technology have brought about improvements through online recruitment centres, virtual interviews, background checks, and online personnel tests. This has extended organisation’s geographic reach when recruiting new personnel.

2.3.12 Theories: Needs as Fundamental Determinants of Human Behaviour

Intrinsic Motivation is often characterised as “a basic, lifelong psychological growth function” (Deci & Ryan, 2000). It often results in the postulation of intrinsically motivated behaviour, and premised upon the individual’s desire for self-determination. Intrinsic motivation comprises the positive feelings derived from spontaneously satisfying activities.

Individuals often encounter such behaviour and are consequently satisfied due to positive feelings. Intrinsically motivated behaviour is defined as activities which individuals find interesting, in the absence of operationally separable consequences” (Deci & Ryan, 2008a; Deci & Ryan, 2011).

Previous research have shown that the psychological importance of input results in intentional behaviour. Such intentional behaviour is either classified as informational or controlling. Informational behaviour promotes self-determination, while controlling behaviour adversely impacts self-determination (Deci et al., 2007). Informational refers to autonomous supportive, competence-promoting input.

Research have confirmed that threats of punishment, deadlines, surveillance, negative feedback and controlling social climates, invariably hinders Intrinsic behaviour. Activities providing for choice, positive performance feedback, and supportive social climates collectively enhances Intrinsic Motivation. Such interactions are driven by the satisfaction of basic needs of autonomy and competence, or a lack thereof.

Apart from the positive of negative impact on Intrinsic Motivation, the social context within which activities occur, plays a central role. Controlling social climates negatively impacts Intrinsic Motivation. By contrast, supportive, informational social climates enhance Intrinsic Motivation (Deci and Ryan, 2008 a). Extrinsic Motivation can be defined as “engaging in an activity because it leads to some separate consequence”. This can constitute a tangible reward or activity which avoids punishment (Deci & Ryan, 2008a).

According to Deci and Ryan, (2000) psychological integrity and social cohesion are key drivers of Extrinsic Motivation. It refers to the manner in which people engage structures and representations of themselves and their world.

The internalisation of Extrinsic Motivation is considered to be “an essential aspect of psychological integrity and social cohesion” (Deci & Ryan, 2000). It refers to the process of how people engage with structures and representations of themselves and their world.

There are three types of internalisation: introjection, identification and integration. Introjection is when individuals take on external contingencies, without accepting them as their own. Identification comprises “people accepting the importance of the behaviour, and taking responsibility thereof. Integration involves internalisation where “people have succeeded at integrating and identification with other aspects of their true or integrated self”. Such behaviour demonstrates autonomy and self-determination.

Effective internalisation is dependent on the degree of satisfaction stemming from basic psychological needs. The latter represents internalisation in its fullest sense; it is the way through which behaviour that has been extrinsically motivated indeed becomes autonomous and self-determined. Although viewed as a natural propensity, effective internalisation depends on the degree of satisfaction of basic psychological needs. In addition, high levels of support are helpful to integration (Deci & Ryan, 2008a).

Motivated behaviour is predicated upon the individual’s needs. This requires an examination of needs, as paramount motivation of human behaviour and associated theories.

2.3.13 Summary of the Scholarship Survey

Some knowledge gaps were identified during the undertaking of this literature review. The effective use of HRIS was first investigated from the perspective of individuals, and limited research, considering factors that could enhance Human Resource professional usage of HRIS (Muriithi, 2014; Kimaro, 2006).

HRIS usage factors from a HR practitioner perspective in the context of State-owned Agencies have not yet been thoroughly researched. The context of developing countries differ markedly from developed countries. There is no model developed and validated for HRIS in the context of SOAs, in developing countries.

HRIS is a programme developed to collect HR information, provide service delivery, processes, analyses, and disseminates information (Troshani *et al*., 2011). HRIS comprises of ICT applications applied across HR functions and service delivery in an organisation (McAlister *et al.,* 1988). This study positions HRIS, as a database application in HR service delivery that can of use in ensuring the reliable Information to assist HR in decision-making processes.

A shortage of Human Resource knowledge and skills have prompted the need to invest in IT systems and not solely rely on the professionalism of Human Resource workers. Adopting IT in Human Resource service delivery therefore remains questionable. The question remains how IT can be successfully deployed in HR service delivery.

HR managers and practitioners need to have an understanding of the role and value of IT in HR service delivery. This study was motivated by a lack of literature on the employment of HRIS systems in State-owned Agencies. Government has invested substantially in HRIS, but the impact of such investment has not materialised.

HR service delivery has been revolutionised by the adoption of IT in rendering HR services coupled to new possibilities. HR service delivery are constantly subjected to change, because IT in not static. Continual changes are experienced insofar hardware, software and networking infrastructures.

The future of HRIS is relatively unknown, but it is suffice to say that technology will continue to evolve. HR should therefore remain abreast of new developments in IT technology, and develop capability in anticipation of future technology changes.

2.4 LITERATURE KNOWLEDGE GAPS

A systematic review of the literature identified specific knowledge gaps. Firstly, effective use HRIS was investigated from the individual's perspective. Limited research is available considering factors which could enhance HR professionals' use of HRIS (Muriithi, 2014; Kimaro, 2006).

Secondly, the use of HRIS from the HR Practitioners' in State-owned Agencies, have additionally not been empirically researched, within the context of developing countries. Developing countries is distinct and uniquely differs from developed countries' contexts. Finally, there is no known empirically validated model for HRIS use in the context of South African SOAs.

Troshani *et al*., 2011 contends that HRIS is a programme designed to collect HR information, provide service delivery, analysis and disseminates HR information pertinent to the HR status of the population. McAlister *et al.*, (2008), explains that HRIS comprises ICT applications applied across a range of functions in HR service delivery.

This study portrays HRIS, sometimes referred to as Human Resource Management Systems (HRMS), Human Resource Management Information Systems (HRIS), and District Human Resource Information Systems (DHRIS) as a database application in HR delivery. It serves as an information system to facilitate HR service delivery and decision-making.

Human Resource Information Systems, Human Resource Management Information Systems, and district Human Resource Information Systems, as a database application in Human Resource delivery which can aid an Information Systems Human Resource service delivery in their decision-making process.

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From the SLR, classification by research topic was discovered in the trend of IS use for Human Resource service delivery. The discovery calls for engagement by the authors and we attempted to identify IS usage with the intent to categorise the various bodies of literature. From Table 2-1, the study discovered that prior studies in the area of Human Resource Information Systems employed research strategies.

These strategies included case studies, critical literature review, theory building, and action research, field study involving primary and secondary data, conceptual development and field experiments. In order to contribute to the research approach in the area of Human Resource Information Systems research, this study employed stratified sampling. With the strata, a random sampling technique was used to identify participants for the study within the categories in the strata.

2.5 SUMMARY OF THE CHAPTER

A Systematic Literature Review (SLR) was applied to retrieve information relevant to this research study. It allows the researcher to collect empirical evidence specific to the research area. Information is then critically assessed and conclusions drawn based on a

summary of the research. Data eligibility was achieved by extracting literature from e-HRM studies.

The literature shows that individuals in the workplace, often find it difficult to integrate HR activities with HRIS to effectively deliver HR services. Human Resource Information Systems (HRIS) or Human Resource Management System (HRMS), is the integration of human resources and information technology, which satisfies the organisational needs. HRIS collects, processes, analyses, and disseminates HR data. It makes use of ICT platforms across functions to provide HR services.

The literature confirms positive correlations between HR practices and increased profitability. Similarly there is a positive correlation between HRM and organisational practices. This increases investment, organisational growth, improved resource employment, and enhanced operational performance. It further reduces the risk of skills shortages, poor stakeholder relations, and harmonises labour and social relationships.

The literature further identifies and discuss a number of theories and frameworks pertinent to conceptualising user acceptance. These include the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour. The improved Unified Theory of Acceptance is known as the Unified Theory of Acceptance and Use of Technology (UTAUT). Two constructs typify user acceptance, i.e. perceived ease of use and perceived usefulness of the HRIS system. These constructs explain and predict users' attitudes towards the use of HRIS.

Historical HR systems were paper-based, and functioned independently of business functions. Initially, data was stored in mainframe computers. HR owned the data and reporting was rudimentary. Progressivey, paper-based systems were transferred to PC and stored on the LAN. Thereafter, rational databases were established, where data is stored in various linkable electronic files.

Call centeres were subsequently established coupled to interactive voice response systems. Future technologies are envisaged to enable speedy access to accurate, current information, that can be accessed via multiple systems. Automated systems

eliminates the arduous task of manually reconciling large datasets with a high degree of accuracy.

HR models often fail in organisations, due to the lack of HR standardisation. KPIs are largely reliant on the standardisation of HR processes, which essentially facilitates comparison. Many organisations have therefore adopted HR shared services organisations. A lack of standardisation leads to increased HR service costs; business units experiencing frustrations because of duplication; added paper trail; and failure to meet HR SLA conditions.

The South African Board for People Practices (SABPP) was developed and published in 2012. SABPP is HR management model comprising HR best practice. Core best practice areas include strategic, functional operational, and measurement. Quality assurance hinges on effective planning, implementation, review, and improvement. Legislation in South Africa regulates HRM and is supported by the Department of Labour's Codes of Good Practice.

Some knowledge gaps were identified during the literature review. Effective use of HRIS has been researched with respect to individuals. Knowledge gaps exist with respect to factors which enhances the HR practitioner's use of HRIS in SOAs. No thorough and empirical research was conducted in developing countries covering this knowledge area. Developing countries are uniquely different to developed countries. Developing countries do not have an HRIS model, which was successfully developed and empirically validated. The literature suggests that adopting IT in HR service delivery is questionable.

CHAPTER 3: THEORETICAL FRAMEWORKS AND THE RESEARCH MODEL

3.1 PRELUDE

While Chapter 2 reviewed literature pertinent to the present research, this chapter explores theories and models used in previous Information Systems research in to assess the conduct of users of ICT. This present study deals with the practice of HRIS. The fact that the theories are relevant to this study facilitate the understanding of the practice and subsequent effective practice of HRIS by individuals. The theories and models explored are the Self-determination Theory SDT (Ryan and Deci, 2000), the Unified Theory of Acceptance and Use of Technology Model (UTAUT) (Venkatesh *et al.,* 2003), and the Representation Theory (Bandura, 1986).

The theoretical frameworks produce a grounded understanding of behaviour towards the use and acceptance of technology (Brown *et al.,* 2008). Behaviour towards HRIS use is, thus, perceived as the outcome of a set of beliefs about the technology, and a set of effective responses to such behaviour in each of these theoretical prescripts.

The chapter progresses with the discussion on technology use's theoretical evolution. This is followed by the critique of the technology use theory. The definition of effective use, Representation Theory and the limitation of Representation Theory are discussed, along with a discussion on the application of effective use and the conceptual research model for the effective use of Human Resource Information Systems by individuals in State-owned Agencies. The operationalised model in the context of State-owned Agencies concludes the discussion in this chapter.

3.2 THEORETICAL FRAMEWORKS

3.2.1 The Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) explains user intention to use IS and subsequent usage behaviour (Venkatesh *et al.*, 2003). UTAUT was developed by consolidating eight theories of use in IS that have been employed in studying individuals' usage behaviours.

In addition to behavioural intention and use behaviour, the UTAUT model consists of four constructs:

- **Performance Expectancy**: The degree to which the individuals believe that the use of the technologies will result in performance gains. This may also be viewed as the perceived usefulness of the technologies.
- **Effort Expectancy**: The ease of use of the technologies.
- **Social Factors**: The extent to which the individuals believe that important others believe that they should use the technologies.
- **Facilitating Condition**: The perceived extent to which the organisational and technical infrastructure required for the support of the technologies exist.

Figure 3-1 illustrates the Unified Theory of Acceptance and Use of Technology (UTAUT). The model also includes four moderating variables: age, gender, education and voluntariness of use.

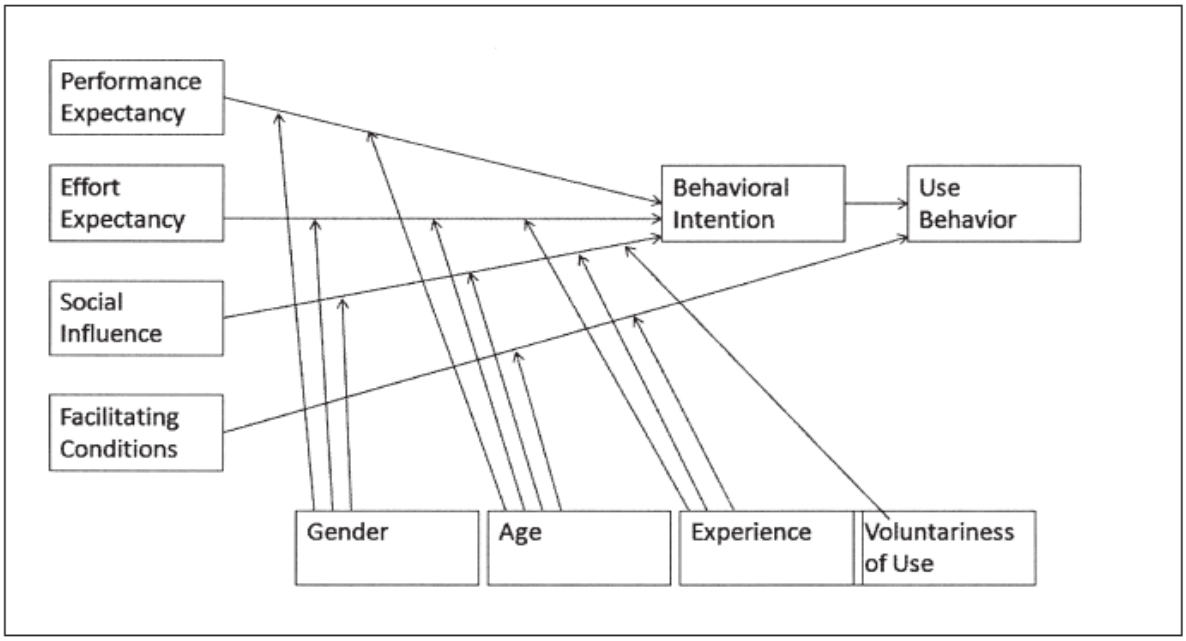

Figure 3-1: Unified Theory of Acceptance & Use of Technology (Venkatesh, *et al.,* 2003).

Four key constructs direct technology acceptance (behavioural intention) and use (behaviour) and include): performance expectancy, effort expectancy, social influence, and facilitating conditions. Age and gender further moderate these four key constructs.

The UTAUT model excludes the effect of facilitating conditions, on behavioural intention. This is because it is expected to be non-significant, since performance expectancy and effort expectancy are included (Venkatesh et al. 2003). Some relationships not hypothesised in the UTAUT model, conflicts with the model's expectations. Studies have been conducted which supports this notion (Schwarz & Chin, 2007; Im *et al.,* 2011; Nassuora, 2012; Wang & Shih, 2009).

Some studies have refuted the aforementioned notion, and have reported a positive effect of facilitating conditions (Jairak *et al.,* 2009). Researchers have also investigated the influence of attitude towards the use of technologies and behavioural intention. Attitude is positively impacted in the event where performance expectancy and effort expectancy is included (Nassuoram 2012; Jairak *et al.,* (2009). These study results contradict the findings of a study conducted by Venkatesh *et al.,* (2003). This study suggests the effect of attitude is a spurious experience, and voluntariness of use.

The validation of UTAUT published in the origin paper, confirms 70% of the variation in technology usage intention (acceptance), and is greater than in each of the eight previous models and its extensions.

The literature confirms that UTAUT has been piloted in several cultures and organisational contexts. A study conducted in Saudi Arabia investigated employees' acceptance and use of computers (Al-Gahtani *et al.,* 2007). Other studies furthermore investigated the acceptance of educational technology in Turkey (Göğüş, & Nistor, 2012).

Studies were also conducted in Korea on the acceptance of MP3 player and Internet banking in Korea (Im *et al.,* 2011). Mixed support for the original TUTAT was experienced where it was applied in other cultural contexts. Some researchers have argued that UTAUT must be broadened to include cultural constructs in concert with current constructs.

The authors of the UTAUT have reviewed eight IT acceptance and motivation models. They concluded that seven constructs constitute significant direct determinants of acceptance and use of technology in one or more of the models. They further established that three of these constructs (self-efficacy, anxiety, and attitude) do not have any direct effect on the intention to use technology. Consequently, these constructs were removed from the UTAUT model.

Only the remaining four constructs: - performance expectancy, effort expectancy, social influence, and facilitating conditions were kept. This study essentially measures the seven original constructs, with a view to compare its influence on acceptance of findings of the UTAUT model.

3.2.2 Self-determination Theory

The motivation to use technology has been established in several studies. In most instances, the objective was determine what motivates customers to accept technology (Guimarães *et al.,* 2002). Self-determination Theory (SDT) SDT has been broadly

emphasised in a user's motivation. Several research studies have shown that motivation can affect technology use (Wechsler, 2006). This theory advocates that motivation has to do with users performing activities, since they find it interesting and feel comfortable in on embarking on it.

Self-determination is defined as the practice of "a sense of choice in initiating and regulating one's own actions" (Deci et al., 2006:580). Motivation in the use of technology has been highlighted in several studies over time and in most studies, the aim has been to uncover ways that motivates the acceptance of technology by customers (Guimarães *et al.,* 2002). In light of this, Self-determination Theory (SDT) has been broadly emphasised in a user's motivation and many studies have shown that motivation can affect technology use (Wechsler, 2006).

The theory maintains that motivation has to do with users performing an activity as they find it interesting & feel willingly satisfied on embarking on it. Figure 3.2 is a diagram to illustrate the Self-determination Theory (SDT). The diagram depicts the components of SDT, namely Intrinsic Motivation and Extrinsic Motivation.

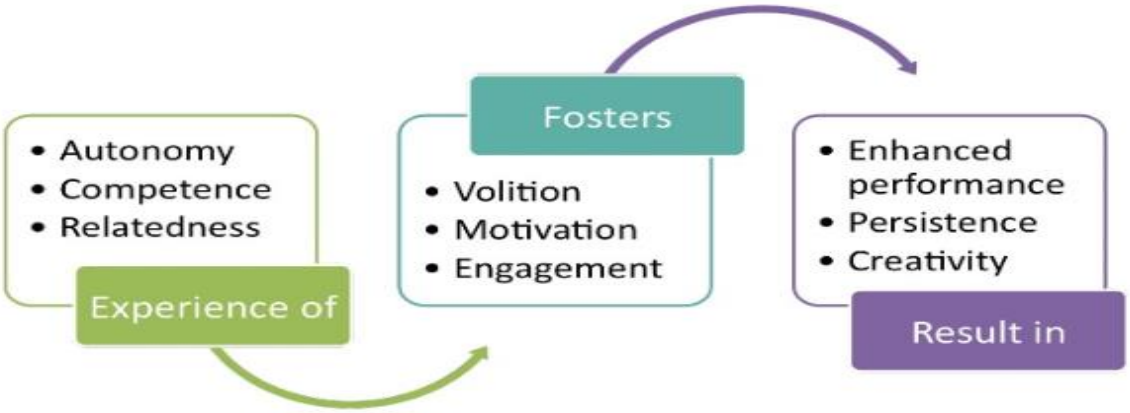

Figure 3-2 Self-determination Theory (Adapted from Ryan & Deci, 2000)

SDT originates from research conducted on goal-directed behaviour. SDT differentiates the goal contents and regulatory processes of goal pursuit, by applying the concept of innate psychological needs, and the extent to which such needs are met.

Psychological needs of autonomy, competence, and relatedness are of paramount importance to ensure sustained psychological growth, integrity and well-being, irrespective of culture.

The literature confirms that motivation is predicated upon basic and common psychological needs in all cultures, notwithstanding superficial differences in cultural values (Deci, & Ryan, 2011; Deci & Ryan, 2008a). The most effective functioning, optimal development, and well-being, is associated with the satisfaction of these universal needs (Deci and Ryan, 2000).

SDT is a motivation theory which advances three universal basic needs. These include the need for autonomy, relatedness, and competence (Van den Broeck *et al.,* 2008). Such needs are driven by "innate psychological nutriments that are essential for ongoing psychological growth, integrity and well-being" (Deci & Ryan, 2000).).

Self-determination Theory is a motivation theory that postulates three universal basic needs, i.e. the need for autonomy, relatedness, and competence (Van den Broeck *et al.*, 2008). These needs refer to "innate psychological nutriments that are essential for ongoing psychological growth, integrity and well-being" (Deci & Ryan, 2000).

Deci and Ryan, (2000) asserts that the need for autonomy involves choice, initiating one's own actions, while acting out of interest and integrated values. The need is satisfied by making individual choices or alternatively supporting externally induced requests (Van den Broeck *et al.,* 2008). Relatedness refers to "a sense of mutual respect and reliance with others" (Baard *et al.,* 2004).

Baumeister and Leary, (1995) differentiates two main features defining the need for relatedness. It requires the individual to frequently and effectively interact with other people. This requires the belief that such people care about their welfare. The need for competence relate to feeling effective and skilful in one's actions. It also requires a belief that one can direct meaningful outcomes (Stone, 2013; Vansteenkiste *et al.,* 2007).

Baard *et al.,* (2004) asserts that basic needs satisfaction is essential for generating favourable HRM outcomes. Basic need satisfaction predicts job satisfaction, vigour, and active organisation commitment (Mayer et al., 2008; (Van den Broeck *et al.,* 2008; Greguras & Diefendorff, 2009).

Recognising the importance of basic needs satisfaction, more research is directed to investigating the antecedents of emerging basic need satisfaction. For example, the SDT and the job demands-resources model was integrated (Van den Broeck et al., 2008; Schaufeli & Bakker, 2004).

This research indicated that job demands and resources, affect basic need satisfaction. They argue that job resources promotes growth and therefore positively influences basic needs satisfaction. They further contend that job demands negatively impact health and adversely influences basic need satisfaction.

The state of basic needs are critical in explaining malfunctions in the workplace. Greguras and Diefendorff, (2009), conversely found person-environment fitness can increase the basic needs satisfaction of employees. They further contend that an adequate fit allows employees to effectively satisfy their basic psychological needs in the workplace.

The current study hypothesises that HRM can satisfy basic needs and therefore generate favourable HRM outcomes. The researcher chose SDT over other theoretical frameworks, due to its widespread empirical support in various disciplines, notwithstanding organisational research, and the model's ability to predict HRM outcomes (Gagne´ & Deci, 2005).

SDT assumes that man is an active organism, is motivated by psychological growth, and assumes responsibility (Carson, 2005; Van den Broeck et al., 2009). SDT is rooted in the assumption that man is an active organism. SDT is suited to unravelling process through which HRM affects HRM outcomes.

SDT presents a theoretical framework for the evaluation of social relationships in the workplace (Deci and Ryan, 2008b). Employees aspire to be autonomous, competent and related to others, and activated and self-motivated by personal successes. Needs satisfaction observes the interaction between a person's inherent activity, and social environments, in a diverse range of life's domains.

Where the social environment supports satisfaction of basic psychological needs of autonomy, competence, and relatedness. The individual's inherent activity and natural growth processes (including motivation) are promoted with positive psychological, behavioural, and developmental outcomes. Where people's needs are satisfied, they engage in activities they find interesting (Intrinsic Motivation) or important (well-internalised Extrinsic Motivation).

The reverse applies when needs are circumvented by deleterious and self-perpetuating effects on well-being outcomes. Deci and Ryan, (2011), argues that failure to satisfy self-determination needs can be associated with insufficiencies in well-being, and concomitant defensive adaptations.

The current research study essentially focuses on relationship between the satisfaction of self-determination needs and employee engagement in the workplace. This includes relevant descriptions of the impact of perceived managerial support and the negative experiences of emotional exhaustion and intention to leave. These latter constructs are considered to be insufficiencies in well-being and defensive adaptations to satisfaction disregard. The key components of SDT are described, starting with the differentiation of motivation supported by the theory.

3.2.3 Effective Use Definition

This study has been designed to determine factors responsible for the effective use of HRIS, from an HR practitioner's perspective. The Oxford Dictionary defines effective as that which produces the desired result wanted, to produce a successful result. The Oxford Dictionary, (2010), defines the term use as to do something with a machine, a

method or an object for a particular purpose. Burtin-Jones and Grange, (2011), defines effective use as increasing achievement of goals when using a particular system.

Different levels of system use within the organisation, is a pre-requisite for understanding effective system use. These levels essentially comprise the individual, group, or organisational. This study investigated the individual level of system use. Bogozzie, (2007) emphasis that consideration of the individual hinges on human behaviour typified by the individual acting in solitude.

He further asserted that people in some instances act interpersonally, as agents of organisations, in concert with others, or holistically as members of a collective. Bagozzie, (2007) argues that the use of technology and its application, often depends on collective decision-making, or the way in which it complements the effect, people or a group.

The study identified specific variables which influence and play a role in formulating a model. This model evaluates the effective use of HRIS by individuals employed in SOAs. The “effective use” is defined as system which optimises the achievement of goals for which it is intended to be implemented. The aforementioned definition is adapted from (Burton-Jones & Straub, 2013). The definition denotes effective use based on the user, system, or task at hand.

Task in Burton-Jones and Straub (2013), can be seen as “goal-directed activity”. In this study, goal-directed activity was recognised as the output, “effective use”. This definition is based on the assumptions in Burton-Jones and Grange (2013), namely:

- This study recognises that ‘use’ can occur at any level of analysis (e.g. individual, group, or organisation).
- This study assumes that systems are never used just to ‘use’ them; rather, they are used to achieve goals.
- This study assumes that goal achievement has objective qualities; it may be difficult to evaluate in some cases, but it is not completely subjective. Operationally, it is

assessed in terms of output. The output gives rise to effectiveness and efficiencies. In this study, the focus is on the effectiveness of system use.

- This study recognises that different stakeholders may have different views on the goal of using a system.

3.2.4 Representation Theory

This study adopted Representation Theory to instil an appreciation of the operative usage of HRIS by Human Resource practitioners (Weber, 2003). The theory proposes that an Information System is comprised of several components, each denoting a field (Weber, 2003).

Weber (2003) contends people use systems to interact with the deep structure. The deep structure on the other hand, faithfully represents the domain. Burton-Jones and Grange, (2013) indicate that a deep structure provides an informed basis for action, as opposed to unfaithful representations.

They contend that "Representation Theory" is based on an information system which intended to be an authentic depiction of the actual world. This study observes Information Systems (IS) and its overall behaviour of the system. IS enables one to understand the behaviour of each employee's specific to the HR environment.

Based on the representation theory, three fundamentals underpin the nature of "effective use"- (i) competencies and motivations of users, (ii) the nature and purpose of the systems, and (iii) the characteristics of tasks. This study focused on the effective use of HRIS by individuals. Consequently, some basics of IS were assumed, and therefore, the starting point was the system element itself – HRIS.

Although this assumption may not necessarily be true. It provides a basis for leveraging an understanding of human behaviour, of individuals who utilise HRIS According to Burton-Jones and Grange, (2013) stipulates that effective use refers to operative usage which is based on three dimensions, as follows:

- Transparent interaction – refers to the extent that a user is accessing the system's representations, unimpeded by its surface and physical structures;
- Representational fidelity – involves the extent to which a user obtains representations from the system, which faithfully illustrates the domain it represents based on its surface and physical structures;
- Informed action – is the extent to which a user acts upon the faithful representations obtained from the system in order to improve their state.

Burton-Jones and Grange, (2013), lists the following limitations of the model:

- The model explains effective utilisation of Information Systems based on a single user interacting with a single IS.
- This model could not be applied to any IS, in an organisation or within a resource-sharing environment.
- Another limitation of the representation model is that there are no control variables in the model.
- The model was not empirically validated given that the researchers emphasised insufficient theory availability.

Burton-Jones and Grange, (2013) cited that the model also helps to identify and explain the nature and overall drivers of effective system usage. This study therefore proposes a theory to bridge shortcomings in the model developed by Burton-Jones and Grange. This is achieved by applying the construal level theory which extends the model, in a specific domain of IS utilisation (more especially HRIS)

3.2.5 Model Operationalisation

Having discussed the three theories underpinning this study, this section deals with the composition of the research model, and the hypotheses that were tested are described. The tested hypotheses are included in the research model. This study is underpinned by UTAUT, SDT and representation theory.

3.2.6 Performance Expectancy and Behavioural Intent

Technology performance and its end to end technical components are collectively called performance expectancy. Various studies have been undertaken on technology acceptance. Chang, (2010) found in their study, that performance expectancy strongly affected behavioural intention.

Various researchers have found that personal ability has a positive impact on the formation of perceptions and attitudes (Bandura & Adam, 1977; Bandura, 1999; Bandura, et al., 1996). Compeau and Higgins, (1995), purports that ability influences decisions about what behaviours to undertake effort and persistence, which is experienced when confronted with challenges, to perform such behaviours and attitudes, of individuals performing such behaviours.

Keil *et al.,* (1995) have shown that the higher the level of HRIS computer capability, the greater would be mediated by perceived ease of use and usefulness. Based on the aforementioned findings of individuals experience and ability with respect of information technology, the following is hypothesised:

H1: *Performance expectancy influences individuals' behavioural intention to use HRIS.*

3.2.7 Social Influence and Behavioural Intention

Social influence infers that technology use is prompted by peer influence, opinions and perception in the surroundings. Chatzoglou, (2009); Schaper and Pervan, (2007), most studies are silent on the positive influence of social influence on the intention to use technology, are silent in most studies. One's attitude toward the product and socialisation forces following referent group norms, are said to influence consumer adoption of a high technology product (Kulviwat *et al.,* 2007).

The effects of an intervention being achieved are driven by mediators such as self-efficacy or perceived benefits (Shin & Kim, 2011). Such mediators assess the performance expectancy of individuals as they utilise computer systems. A study

confirmed that social influence correlates positively with subjective norms when using IS (Bhattarai *et al.,* 2010). Their study was based on a similar study undertaken by (Venkatesh & Davis, 2000). The study also concluded that there is a positive correlation between technical support and PC usage.

The length of use of an application was found to be a positive personal factor (Thieme *et al.,* 2012). The reason for this is that it impacts on HRIS utilisation experience and ability to use computer systems competently. Venkatesh *et al.,* (2003) define social influence as the extent to which individuals perceive the importance for others to believe they should utilise the new system. This definition however focuses on subjective norms. To measure subjective norms three type of components are required to be investigated (Venkatesh *et al.,* 2003).

These three components include subjective roles, subjective values, and social situation. Consolvo *et al.,* (2009) summarised the research area, into information satisfaction, system satisfaction, and support group satisfaction. Each have unique attributes which correlate with users' social influence of using information technology. It is therefore hypothesised that:

H2: *Social influence influences Human Resources practitioners' behavioural intention to use HRIS.*

3.2.8 Facilitating Condition and Behavioural Intent

Facilitating conditions infer that users believe that necessary care and technical infrastructure is warranted to support the use of technology. The study on UTAUT key in the adoption of technology, recommends that support staff and guidance availability are pivotal factors required for adopting relevant technology (Venkatesh *et al.,* 2003). This study addresses facilitating conditions which focus on the technological landscape artefact, which is structured to remove challenges, impeding the use of technology, which coordinates the effective use of HRIS.

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This study addresses facilitating conditions which focus on the technological landscape artefact, which is structured to remove challenges, impeding the use of technology, which coordinates the effective use of HRIS.

Management sponsorship, user involvement, and participation underpin successful HRIS development (Dilworth et al., 2010). Additional factors include planning for development, management of data problems, and use of the systems. The key reason for user involvement and participation is to facilitate implementation (Eley *et al.,* 2008).

Systems development processes are continuous and thereby establishes facilitating conditions for the use of systems. In addition, management processes like company policies and rules regulating IS in organisations, essentially creates facilitating conditions for its use. HRIS policies may reference systems user accessibility anywhere and at any time.Therefore, consistent with the model of Venkatesh *et al.,* (2003), it is hypothesised:

H3: *Facilitating condition influences individuals' behavioural intention to use HRIS.*
Behavioural Intention, Acceptance and Use of HRIS.

Behavioural intention refers to the likelihood that a user will perform a specific function. Research shows that this is a vital factor which drives behaviour (Chang, 2007). Behavioural intention positively correlates with the use of technology.

Behavioural intention comprises norms, roles, and values. Fishbein and Ajzen, (1975), defines behavioural intention as the extent to which individuals believe that people are important and whether they should perform the behaviour in question. Superior, peer and subordinate influences in the workplace, have shown to be strong determinants of behavioural intention, particularly within the technology domain (Mathieson, 1991; Venkatesh & Davis, 2000).

From the aforementioned, the subjective roles and values, also known as social factors, will have superiors, peers, and subordinates as determinants. Subjective culture infers a work group's influence on the individual within the workplace. Benynon *et al.,* (2008), are collectively of the view that social factors regulate the behaviour of HRIS users. The following hypothesis is therefore provided:

H4: *Individuals' behavioural intention influences the acceptance and use of HRIS.*

3.2.9 Effort Expectancy and Behavioural Intention

The easiness and the complexity found in using technology are resultant by effort expectancy. Numerous early studies suggested that effort expectancy affects the use of technology and these studies further maintain that it has a positive effect on the intention to use technology (Wu et al., 2008).

A study conducted by Kijsanayotin *et al.,* (2009) concluded that users who find technology easy to use will most likely use any technology. Conversely, other studies maintain that effort expectancy is not useful in determining the adoption and use of technology (Steele et al., 2009; Duyck *et al.,* 2008).

Burreli, (2017) has formulated the Expectancy Theory of Motivation and has led to the development of the expectancy construct. The Expectancy Theory postulates that individuals evaluate the consequences of their behaviour in terms of potential rewards and base their choice of behaviour on the desirability of the rewards. Davis et al, (2010) refers to perceived usefulness in the TAM, and is also referred to as perceived consequences.

Davis et al, (2010) defines perceived usefulness as a person's belief that using a particular technology enhances their work performance. Perceived usefulness mirrors performance-use contingency, which is closely linked to outcome expectations, instrumentality, and Extrinsic Motivation (Davis *et al.,* 2010).
This study therefore hypothesises that:

H6: *Effort expectancy influences individuals' behavioural intention to use HRIS.*

3.2.10 Intrinsic Motivation

Intrinsic Motivation encompasses the drive to enjoyment and satisfaction when utilising technology (Lavigne *et al.,* 2007). Individuals will serve as an intrinsic motivating factor in the use of this technology, when finding pleasure in utilising HRIS. The following hypotheses are therefore applicable:

H7: *Intrinsic Motivation positively influences behavioural intentions to use HRIS.*

H8: *Intrinsic Motivation positively influences the use of HRIS.*

3.2.11 Extrinsic Motivation

Extrinsic Motivation bears reference to technology that attains specific goals and rewards, which are different from the activity or the technology itself. (Teo *et al.,* 2007). The needs such as spoken or noticeable rewards, linked to the utilisation of HRIS, may foster acceptance and use. This study therefore hypothesises:

H9*: Extrinsic Motivation positively influences behavioural intentions to use Human Resource Information Systems.*

H10*: Extrinsic Motivation positively influences the use of Human Resource Information Systems.*

3.2.12 Learning to Learn Representation and Effective Use

The fidelity of representation and how to leverage such representations are underscored by the individuals' eagerness to learn to utilise HRIS effectively and HRIS domain. This is dependent on the degree to which HR practitioners lean how to effectively utilise HRIS in order for faithful representations to inform HRIS functions.

This is applicable both in terms of the physical and surface structure. Burton-Jones and Grange, (2013) are of the view that individual learning to learn representations positively impacts effective HRIS utilisation. The following hypotheses are therefore applicable:

H11: *Adapting physical structure influences individuals' learning to learn representation.*

H12: *Adapting surface structure influences individuals' learning to learn representation.*

3.3 INFORMED USE AND HRIS EFFECTIVE USE

Information is important for individuals during decision-making that affects the business. Popovič *et al.,* (2012) proclaim that information will not generate benefits if it is not used for making decisions and informing action. Going along with the perspective of Schepers & Wetzels (2007) , an informed action that HR practitioners make, will be identified through informed decisionmaking by applying HRIS.

Notwithstanding the aforementioned, learning to learn representations refers to any action that a Human Resource practitioner makes in order to improve his or her ability to make a decision that impacts Human Resource service delivery.

In this study, therefore, it is contended that actions based on effective use of HRIS representation fidelity will help individuals' decision-making and learning to learn representations' influence on the validity of information, thereby impacting the delivery of HR services Therefore, it is hypothesised that:

H13: *Learning to learn representation influences individuals' informed action.*

H14: *Learning to learn representation influences individuals' representation fidelity.*

H15: *Learning to learn representation influences individuals' transparent interaction.*

H16: *Informed action positively influences individuals' effective use of HRIS.*

Table 3-2 presents a brief List of Hypotheses formed from UTAUT applied in this study and their respective descriptions.

Table 3-2 List of Hypotheses from UTAUT Applied in This Study

Hypotheses	Descriptions
Hypothesis 1	Performance expectancy influences individuals' behavioural intention to use HRIS.
Hypothesis 2	Social influence influences Human Resources practitioners' behavioural intention to use HRIS.
Hypothesis 3	Facilitating condition influences individuals' behavioural intention to use HRIS**.**
Hypothesis 4	Individuals' behavioural intention influences acceptance and use of HRIS.
Hypothesis 5	Self-efficacy affects ease of use in individuals' acceptance and use of HRIS.
Hypothesis 6	Effort expectancy influences individuals' behavioural intention to use HRIS.

Table 3-3 List of Hypotheses from SDT applied in this study and descriptions.

Table 3-3 List Of Hypotheses formed from SDT

Hypotheses	Descriptions
Hypothesis 7	Intrinsic Motivation positively influences behavioural intentions to use HRIS.
Hypothesis 8	Intrinsic Motivation positively influences the use of HRIS.
Hypothesis 9	Extrinsic Motivation positively influences behavioural intentions to use Human Resource Information System
Hypothesis 10	Extrinsic Motivation positively influences the use of Human Resource Information System

Table 3-4 is a brief list of hypotheses formed from Representation Theory in this study and their description.

Table 3-4 List of Hypotheses from Representation Theory

Hypotheses	Descriptions
Hypothesis 11	Adapting physical structure influences individuals' learning to learn representation.
Hypothesis 12	Adapting surface structure influences individuals' learning to learn representation.
Hypothesis 13	Learning to learn representation influences individuals' informed action.
Hypothesis 14	Learning to learn representation influences individuals' representation fidelity.
Hypothesis 15	Learning to learn representation influences individuals' transparent interaction.
Hypothesis 16	Informed action positively influences individuals' effective use of HRIS.
Hypothesis 17	Effective Use positively influences individuals' transparent interaction.
Hypothesis 18	The relationship between acceptance and use is mediated positively by Intrinsic Motivation.

Figure 3-4 shows the diagrammatic representation of the research model for this study. The Unified Theory of Acceptance and Use of Technology, the Self-determination Theory, and the Representation theory collectively informs the development and conceptualisation of the research model. This research model purports that the extent of user behaviour on HRIS can be measured by behavioural intention to utilise the HRIS. Effort expectancy, social influence, performance expectancy, facilitating conditions, Intrinsic Motivation and Extrinsic Motivation are collectively precursors of behavioural intention to use HRIS.

Self-efficacy refers to confidence shown by users who have elevated a level of self-confidence in their technical capability will be more enthusiastic to use technology (Liao *et al.,* 2013). Users having a high level of confidence are likely to engage in technology use. Users having increased confidence are often insistent when confronted

by challenging tasks and simply more active in adopting and utilising other technologies (Shao *et al.,* 2015).

To attain general recognition and implementation of HRIS, the following factors were taken into consideration for studying the behavioural intention of the Human Resource practitioner: expectancy, effort expectancy, social influence, facilitating condition and self-efficacy. In support of the study, the following factors were used, in order to examine the dynamics influencing Human Resource practitioners while implementing HRIS to accomplish effective use. The factors are adapting physical structure, adapting surface structure, learning to learn representation, representation fidelity, informed action and transparent interaction.

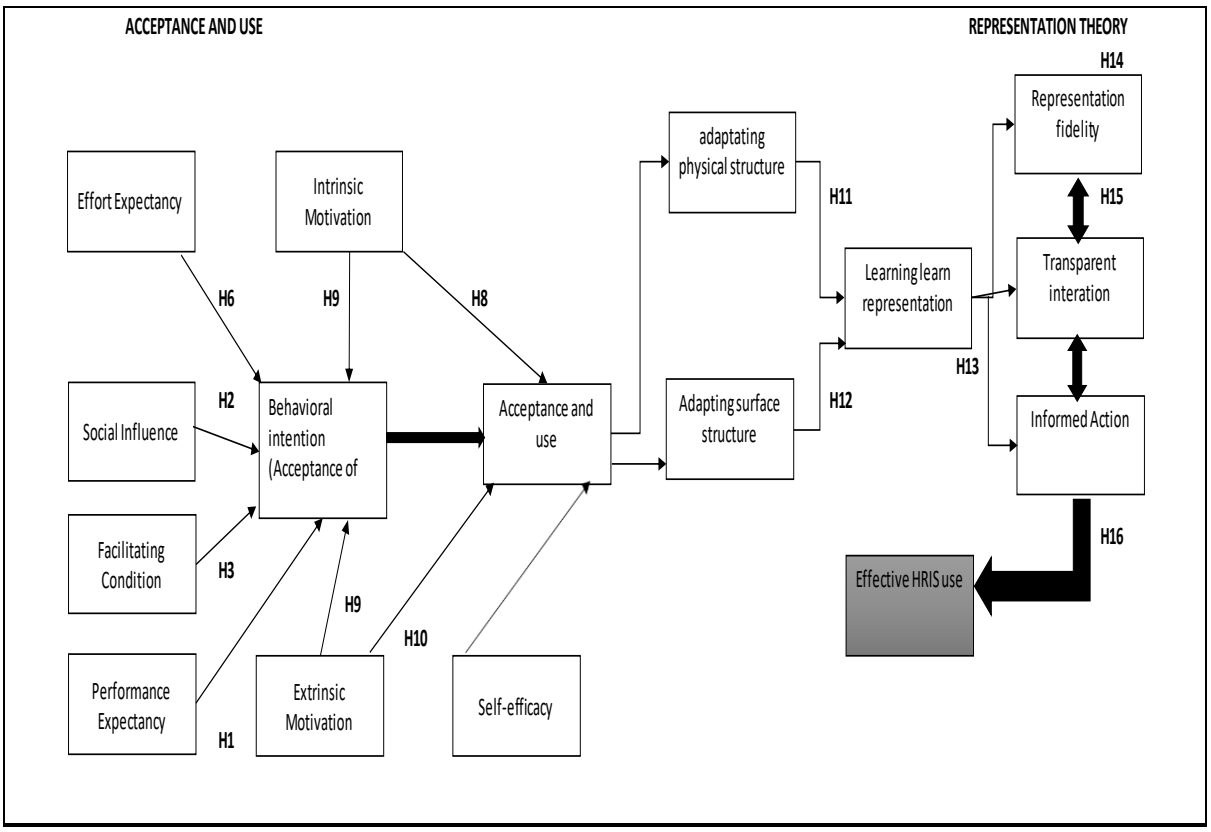

Figure 3-3. Research Model

The above figure presents the constructs in the research model for effective use of Human Resource Information Systems by individuals in South African State-owned Agencies. Table 3-4 presents the definition of each of the constructs in the research

model of effective use of HRIS by individuals. The concepts defined for the recognition and implementation of HRIS are performance expectancy, effort expectancy, facilitating conditions, social influence, behavioural intention and self-efficacy.

The concepts defined for the effective implementation of HRIS are adapting physical structure, adapting surface structure, learning to learn representation, representation fidelity, informed action and transparent interaction. Table 3-5 lists the definitions of the different constructs in the Research Model.

Table 3-5 Definitions of Constructs in the Research Model

Construct	Definition	Source
Performance Expectancy	The level of belief that the implementation of HRIS will assist with achieving job performance	Venkatesh *et al.* (2003, 2012)
Effort Expectancy	The level of ease accompanying the implementation of HRIS	Venkatesh *et al.* (2003, 2012)
Facilitating Conditions	The level of belief of a Human Resource practitioner that there exists support for the implementation of HRIS within the Human Resource facilities	Venkatesh *et al.* (2003, 2012)
Social Influence	The level of perception by a Human Resource practitioner that others within the Human Resource care facilities consider that they should implement HRIS	Venkatesh *et al.* (2003, 2012)
Behavioural Intention	The level at which a Human Resource practitioner has consciously devised plans to execute or not to execute some identified action	Venkatesh *et al.* (2003, 2012)
Self-efficacy	The level of belief by a practitioner in their ability to implement HRIS to perform an identified task or job	Bandura (1992, 1999)
Acceptance and Use	The level of belief that the implementation of HRIS has an influence on their job	Burton-Jones and Grange (2013)
Adapting Physical Structure	These are the accessories that support the HRIS system. They are the keyboards, mouse, disk drives, monitors, and networks.	Burton-Jones and Grange (2013)

Construct	Definition	Source
Adapting Surface Structure	These are the computer capabilities that facilitate access and interaction with HRIS system's user interface This includes the system's various screens, menus, and report layouts.	Burton-Jones and Grange (2013)
Learning	This is the degree of belief that the level of learning/training received assists with the implementation of HRIS	Burton-Jones and Grange (2013)
Transparent Interaction	This is the frequency with which a Human Resource practitioner accesses HRIS The HRIS should be unimpeded by the adaptive surface and adaptive material structure	Burton-Jones and Grange (2013)
Representation Fidelity	The representation of the interaction between the HRIS system and individuals. The desired structure that signifies the system domain is faithfully represented.	Burton-Jones and Grange (2013)
Informed Action	This refers to any action that a Human Resource Information System users or practitioners are engaged in to improve their ability to make a high-quality decision or ideas.	Burton-Jones and Grange (2013)
Effective Use	The level of agreement with how HRIS assists with providing efficient Human Resource service and administration	Burton-Jones and Grange (2013)

3.4 SUMMARY OF THE CHAPTER

The theories underpinning this study of the use and subsequent effective use of HRIS were discussed in the chapter. The discussion began with the technology use behaviour. The chapter then defined effective use, Representation Theory and the limitation of Representation Theory. The model was then operationalised in the context of this research. The research methodology will next be discussed in Chapter 4.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 PRELUDE

While Chapter 3 discussed the theories underpinningthe present study and subsequently informing the research model This chapter presents the research methodology followed in the study. The chapter begins with research the philosophy section where the epistemology and the ontology are also discussed. The discussion is followed with the Interpretivism and positivism research philosophy. Subsequently, there is a description of the research approach, as well as the research strategy which dictated the data-collection technique used. The population, sampling and sampling technique will be discussed while the data collection procedure used in the study will also be described.

Thereafter, a discussion of the way the pilot study and the principal survey were conducted follows. This chapter of the thesis will then discuss the scope or the limitations experienced during the process. An analysis of the data follows in chapter 5.

4.3 RESEARCH PHILOSOPHY

The research philosophy assists with the contextualising this study. To have a complete understanding of this phenomenon, this study examined the ontological, epistemological, and methodological procedures as they are implemented in the framework of the research.

Philosophy guides the views and the assumptions made on certain elements of the world and how these elements are structured and the knowledge is gained in the process (Danermark *et al.*, 2002). The research philosophy informs the sense of reasoning in this research to contextualise it .The three generally acceptable research paradigms are: positivism, Interpretivism and the critical paradigm. All three paradigms have different ontological and epistemological principles guiding them.

Table 4.-1 below presents the paradigm as it is understood and used in this study. The table presents the paradigm in the positivist, interpretivist and critical realist views of the reality of observer. Scenarios in which each of these paradigms were used are further presented in this table, through the research paradigm using the ontological principle, epistemological principle and the role of theory in practice. Positivism views the reality of the observer through the measurement instrument developed for their research (Oates, 2006; Du Plooy-Cilliers *et al.*, 2014).

Table 4-1 Research Paradigms in Information Systems (Orlikowski & Baroudi, 1991)

	Positivism	Interpretivism	Critical
Ontological Principles	Objective physical and social world that is independent of humans. Nature of the world can be observed and measured. Utilises modelling and measurement, constructs, variables and instruments to capture the nature of reality. People's actions are intentional and rational. People behave in stable and logical ways and that conflict is not prevalent in organisations. Conflict is seen as dysfunctional and should be prevented.	Reality and our knowledge of it are social products. Reality is only understood through the social actors that construct and maintain the reality. Highlights the importance of subjective meanings. Focuses on how and why people give the world certain meanings. Social reality is not 'given' it is reproduced through on-going actions and interactions of people.	Social reality is historically constituted thus people are not confined to a particular state since they have the potential to act. Capacity to act can be constrained by prevailing systems of economic, political or cultural authority. Social reality is produced and reproduced by humans but this reality also has objective properties that are likely to influence people's experiences. Social relations continuously change. Society has inherent contradictions.
Epistemological Principles	The aim of the research is empirical testability of theories. Search for universal laws. The objective is to explain, predict and control.	The researcher gains knowledge about social processes through getting involved in their world.	Knowledge is situated in social and historical practices of humans. There is no theory-independent collection of data.

	Positivism	Interpretivism	Critical
	Collect data mainly through sample surveys and controlled experiments. Relies on statistical analysis to analyse data, infer and produce causal laws. Highly structured methodologies with a preoccupation with validity, reliability and measuring instruments	Language used by people to describe social practice creates the practices. Understanding social reality requires obtaining knowledge about how practices and meanings are formed and informed by language and norms. Examine human agents within their social settings.	Researcher interprets data to substantiate or falsify a theory. Knowledge is not only limited to re-describing and interpreting how people perceive phenomena in society. The researcher has a duty to question inequalities and substantial conditions of power and dominance.
Role of Theory in Practice	The relationship between theory and practice is technical. Scientific research is seen as value-free thus researchers as independent observers can objectively evaluate and predict actions however they do not make moral judgements or provide subjective opinions.	Interpretive studies are not value-neutral thus the researchers' prior assumptions, beliefs and values influence their investigation.	Social research and social theory are expected to be viewed as social critique.

Positivist researchers observe and measure reality in an objective manner and try to prevent bias in their measurement of these realities (Myers, 2009). On the other hand, the interpretivist researcher's view has to do with the access to reality through social constructs (Du Plooy-Cilliers *et al.*, 2014). Interpretivism tends to have a complete understanding of the phenomenon of the social reality through the guidelines presented to them by the research paradigm (Myers, 2009). Table 4-1 above, lists the different research paradigms applied in information systems.

4.3.1 Epistemology

Epistemology relates to the elements of satisfactory knowledge in research (Saunders *et al.,* 2009); considering the essence of reality in real-world settings and interactions among social beings (ontology), and the values we place on a research study (axiology). The philosophies provide perspectives into grasping or interpreting facts, ideas and events that enable us to understand and interpret the world (Saunders *et al.,* 2009; Crotty 2007; Levin 1988).

Simply put, epistemology is how we gain what we know, in consideration of the relationship between the researcher and research, and issues of objectivity (Mertens, 1998). Thus these philosophies inform methodology and provide the context for the research process, its logic and criteria (Bing, 2007).

Remenyi *et al.* (1998: 282) define epistemology as *"the study of theory of the nature and grounds of knowledge especially with reference to its limits and validity";* and ontology as (Remenyi *et al.,* 1998: 282) *"a branch of philosophy or metaphysics concerned with the nature and relations of being".* First, the assumption about the ontology concerning the phenomena under investigation is whether the 'reality' to be investigated is external to the individuals in this situation.

Going along with this belief, on whether the 'reality' is unbiased, or if it is the belief that relates to an individual's cognition on the use of HRIS; and whether the 'reality' is given 'out there' in the world, or whether these are the product of one's mind (Edwards & Skinner, 2009; Cibangu, 2010).

Relating to Edwards and Skinner, (2009) and Cibangu, (2010), this study uses the basis of their inquisitive mind to comprehend the ontological and epistemological essence of this study. There are assumptions about the grounds of knowledge that have to do with how one individual began to understand the impact of HRIS on HR service delivery and administration, while communicating this knowledge to fellow individuals.

These assumptions necessitate ideas about what forms of knowledge can be obtained from individuals while working, and how this knowledge can be elicited from these

individual's. Eliciting the know forms the basis that dictates the understanding of the epistemological stance. The epistemological assumption in these contexts, hinges upon two schools of thought. The first is whether knowledge can be acquired, or conversely whether it is something which is personally experienced (Du Plooy-Cilliers *et al.,* 2014). This study's key assumptions is predicated upon the relationship between human beings and their environment, since ontological and epistemological conscripts cannot be conceptually separated. This key assumption underpins all areas of social science, more especially since human life is fundamentally the subject and object of enquiry (Burrell & Morgan, 2005).

Social sciences often identify perspectives which contextualises human beings as adopting a mechanistic or sometimes deterministic manner, in response to external environmental conditions (Du Plooy-Cilliers *et al.,* 2014). This view perceives human beings and their experiences as products of the environment, where humans are ultimately conditioned by external environmental conditions.

Social scientists align to various ontologies, epistemologies and models of human nature (Burrell & Morgan, 2005). Methodological aspects are fundamental and thus influenced by concepts itself, measurement, and the identification of intrinsic themes (Du Plooy- Cilliers *et al.,* 2014).

An alternative view of social reality, emphasises the importance of subjective experiences of human beings, in conceptualisation of the social world. The quest for understanding is therefore directed at different issues, and dealing with them in respective ways (Burrell & Morgan, 2005). This study investigates the manner in which individuals use and subsequently effectively uses HRIS, for purposes of rendering HR service delivery.

4.3.2 Ontology

The ontological and epistemological stance for this study enables this study to be placed in the HRIS domain. This section discusses various stances regarding reality and how knowledge about reality is acquired. The stance taken for this study allows for differences

between how reality (i.e. ontology) is seen and how people come about acquiring knowledge of this reality (i.e. epistemology) (Fonseca, 2007).

There are three views on ontology (Fonseca, 2007), and each of these views allows one to examine ontology differently. The three general views are - empiricism, idealism, and critical realism. Critical realism permits a singular reality, and access to this reality worldview is constitutive, that is, if it is not known, then it does not exist (Mounce, 1999). Therefore, when studying the effective use of HRIS by individuals, an empirical worldview allows for concentration in HRIS to observe how HRIS impacts the representation of this reality in order to achieve use and effective use.

Contrastingly, idealism contradicts a single objective but offers a plurality of reality. Idealism objectives emanate from the belief that depths of social structures, irrespective of the structures, are exclusive products of human conception (Bhasker, 1998).

Therefore, this view leaves one with the assumption that effective use of HRIS is characterised by Human Resource institutional realities of the objectives. This makes it impossible for a single individual to objectify the extent of use and effective use. These realities exist tangibly in a way that does not rely on human consciousness, thereby negating the idealist position for this study.

The shortcomings of empiricism and idealism for this study bring about the view of critical realism, which offers a versatile philosophical stance. Critical realism delves into epistemological territories (Lee & Baskerville, 2003). This view makes for a distinction between the transitive and intransitive in the domain of knowledge with the view of asking the following questions:

- **Domain questions:** This poses questions relating to the phenomena of interest in this study. What are the problem areas in the study? What are the boundaries of this research?
- **Structural or ontological questions:** What theories underpin this study? How is theory understood in the study? What are the constituents of these theories? What forms does the knowledge contribution in this study take? What types of questions are addressed in the study?

- **Epistemological questions:** How are the theories for this study constructed? How can scientific knowledge be acquired in this study? How are these theories going to be tested? What research methodology should be used in this study? What measures are applied to check the rigour of research methodology used in this study?
- **Socio-political questions:** How is the outcome of this study understood by stakeholders involved in this study context? Where and who developed the theory used in this study? What are the historical and sociological evolutions of the theories used in this study? Do scholars in the discipline area of this study agree with the theories adopted for this study? Is the knowledge expected to be useful in practice? Are there social, ethical, or political issues associated with the use of the theories used for this study?

A research philosophy means the set of beliefs about the nature of reality being investigated (Lee & Baskerville, 2003). This has to do with the underlying nature of knowledge associated with the reality being investigated. Research philosophy provides the explanation for how research should be carried out (Lee & Baskerville, 2003).

Therefore, understanding the research philosophy being used can help explain the assumptions inherent in the research process and how this fits the methodology being used (Oates, 2008). Research philosophy helps the researcher to understand which research design to use. The two main research philosophies in research are Interpretivism and positivism.

4.3.3 Interpretivism

Interpretivism deals with understanding phenomenon in a cultural and contextual situation (Orlikowski & Baroudi, 1991). Information Systems research is often viewed as interpretive, on the assumption that knowledge within a research discipline is extrapolated from social constructions such as tools, documents, language, and other Information Technology artefacts (Klein & Myers, 1999).

This is the popular philosophy in Information Systems research. Trends in Information Systems research in the last 10 years indicate that another philosophy in IS research is essential for research in this field of study (Venkatesh *et al.,* 2016).

Hooper *et al.,* (2008) classified research philosophy into three distinct dimensions. The dimension seeks to understand the nature and perception of the world. The second, involves choosing an appropriate data collection method. The third dimension deals with analysis of the collected data.

4.3.4 Positivism

Blumberg *et al.,* (2008) contends that positivism advances the notion that reality exists independently of the phenomenon under examination. By contrast Oates, (2008) purports that positivism presumes what is observed, is interpreted in the same way between participants. He emphasises that the key approach, is to evaluate the differences and nuances, in the respondents' understanding. The researcher achieves this by carrying out an experiment to look for cause-and-effect evidence.

Oates, (2008) advances that the experiment enables the researcher to foresee what will occur in specific situations. Positivist research delves into the understanding the world that exists autonomously of human beings, measurement and modelling, hypothesis testing, data analysis, and data interpretation. This study, therefore, adopts the positivist research philosophy. The study aims to establish relationships between theory and observation. The study develops hypotheses, tests the understanding of the hypotheses from analysed data and presents the evidence which supports or rejects the claims and the assumptions made in the study.

4.3.5 Positivism as the preferred research philosophy

The study followed positivism as a worldview. The reason for this can be ascribed to its characteristics of abstraction. This hypothesis can be generalised to a larger extent. Hence the data specific to the same issue with different social contexts can be gathered.

The hypothesis “can generalise a research finding when replicated on many different populations and subpopulations” (Johnson & Onwuegbuzie, 2004).

Future forecasts can be done using quantitative research methods. The method is “useful for sourcing information that permits quantitative forecasts to be made” (Johnson & Onwuegbuzie, 2004).

Validity is an extensive area, in positivism. It is retained by way of the vigilant use of methods. “In quantitative data validity might be improved through careful sampling, appropriate instrumentation and appropriate statistical treatments of the data” (Cohen *et al.,* 2007).

The precision of the Parsimony makes it beneficial for analysing large number of people, and therefore saves time (Cohen *et al.,* 2007). Quantitative information paves a way to further scientific research. “Quantitative data offers unbiased records which researchers can employ to base their scientific assumptions.”(Johnson, 2014).

Positivist research asserts that it is conceivable to embrace a distant, detached, impartial and non-interactive position, when adopting an isolated, detached, unbiased and non-reciprocal position (Cohen *et al.,* 2007). This position empowers the researcher to assume the role of an objective investigator, while making withdrawn translations around the available information collected in a clearly value-free way.

For the same reason, positivists lean towards an expository elucidation of quantifiable information (Neville, 2007). The unique thoughts of the social relationship ought to, thus, be connected to the exact measurements of the social world.

Reliability keeps consistency, dependence and replicability in its data collection. “In this structure, reliability is a measure of consistency over time and over comparable samples. A dependable instrument for a piece of research will yield comparable information from comparable respondents over time” (Cohen *et al.,* 2007).

Epistemologically being empirical it gives possibilities of prediction. Unlike interpretivists, this paradigm is objective, it is transparent from non-public prejudices. Being legitimate and dependable one can continually remain realist ontologically and can be counted on it for long. Precision and parsimony saves time and provides sample for quick writing.

Many accounts of positivism advocate that scientific knowledge is derived from the accumulation of confirmed facts. These facts feed into the theoretical constructs pertinent to a particular area of knowledge. Thus, the theory expresses and displays empirical research. Such findings are often referred to as legal guidelines confined to a specific field, specifically empirically installed regularities (Creswell, 2016).

Moreover, it ought to be rather apparent that matters that cannot be seen (observed), for instance people's ideas and attitudes, cannot be common as legitimate proof and knowledge. First, many accounts of positivism advocate that scientific know-how is arrived at through accumulation of validated facts.

These facts feed into the theoretical edifice pertaining to a particular domain of knowledge. Thus, theory expresses and displays the empirical research. Such findings are frequently referred to as legal guidelines pertaining to a precise field, namely empirically established by set regularities (Creswell, 2015).

Haworth, (2011) remind us, logical hypothesis are seen by positivists as giving theories, which are then submitted to exact testing. This infers science is deductive, as it looks to extricate explicit suggestions from general records of the real world. Sensibly, this would involve the development of a particular hypothesis to clarify the laws in a specific field. A theory is accordingly determined to empower the analyst to present the hypothesis to thorough observational assessment before dismissing, reconsidering, or tolerating the hypothesis.

Finally, with regards to scientific theories, it might then be expressed that the positivist is concerned with the production of laws material to all individuals at all times (Bhattacheriee, 2012). Dash (2005), continues from the past contention that they express the motivation behind positivism is to look for generalisation (theories). The said

generalisations are, in light of and grounded in the normal science laws, which are not really relevant to social structures.

In aggregate, positivism "compares authenticity with science and logical techniques" (Houghton, 2011); and in that capacity, it includes various suppositions, (cf. passage 5.2.1.1, p. 301). In this proposal, hypotheses are looked for in Section Four, where the acknowledgment and utilise and successful utilisation of HRIS for Human Asset conveyance was examined to decide their regular substance. Table 4-2 summarises various research paradigms.

Table 4-2 Summary of Research Paradigms

Research	Positivism	Realism	Interpretive	Pragmatism
Ontology The researcher's view of the nature of reality or being.	External objective and independent of social actors	Is objective. Exists independently of human thought and beliefs or knowledge of their existence (realist), but is interpreted through social conditioning (critical realist)	Socially obstructed, subjective, may change, multiple.	External, multiple, view chosen to best enable answering of research question
Epistemology The researcher's view regarding what constitutes acceptable knowledge	Only observable phenomena can provide credible data, facts. Focus on casualty and law-like generalisations, reducing phenomena to simplest elements	Observable phenomena provide credible data, fact. Insufficient data means inaccuracies in sensations (direct realism). Alternatively, phenomena create sensations which are open to misinterpretations (critical realism). Focus on explaining within context or contexts.	Subjective meanings and social phenomena. Focus upon the details of situations, a reality behind these details, subjective meanings motivating actors.	Either or both observable phenomena and subjective meanings can provide acceptable knowledge department upon the research question. Focus on practical applied research, integrating different perspectives to help interpret data.

Research	Positivism	Realism	Interpretive	Pragmatism
Axial Researcher's view of the role of values in research	Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance.	Research is value-laden; the researcher is biased by worldviews, cultural experiences and upbringing. These will impact on the research	Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective.	Values play a large role in interpreting the results, the researcher adopting both objective and subjective points of view.
Data collection Techniques most often used	Highly structured, large samples, measurement, quantitative, but can use qualitative.	Methods chosen must fit the subject matter, quantitative or qualitative.	Small samples, in-debt investigations, qualitative.	Mixed or multiple method designs, quantitative and qualitative.

4.4 RESEARCH APPROACH

There are two types of research approach, namely, the deductive and the inductive approach, which is explained below.

4.4.1 Deductive Approach

The deductive research approach permits the formulation of a hypothesis from a theory or research framework, afterwards formulates the approach to test it (Rich & Ginsburg, 1999). Figure 4-1 illustrates the deductive research approach.

The deductive research approach develops hypotheses and statistically tests the developed hypotheses to an acceptable level of probability which influences the outcome of the study. This is particularly suitable for positivist research (Sneider & Larner, 2009). This approach can also be used in qualitative research techniques, however, in that situation, the potential outcome is different from the hypothesis testing (Saunders *et al.,* 2009).

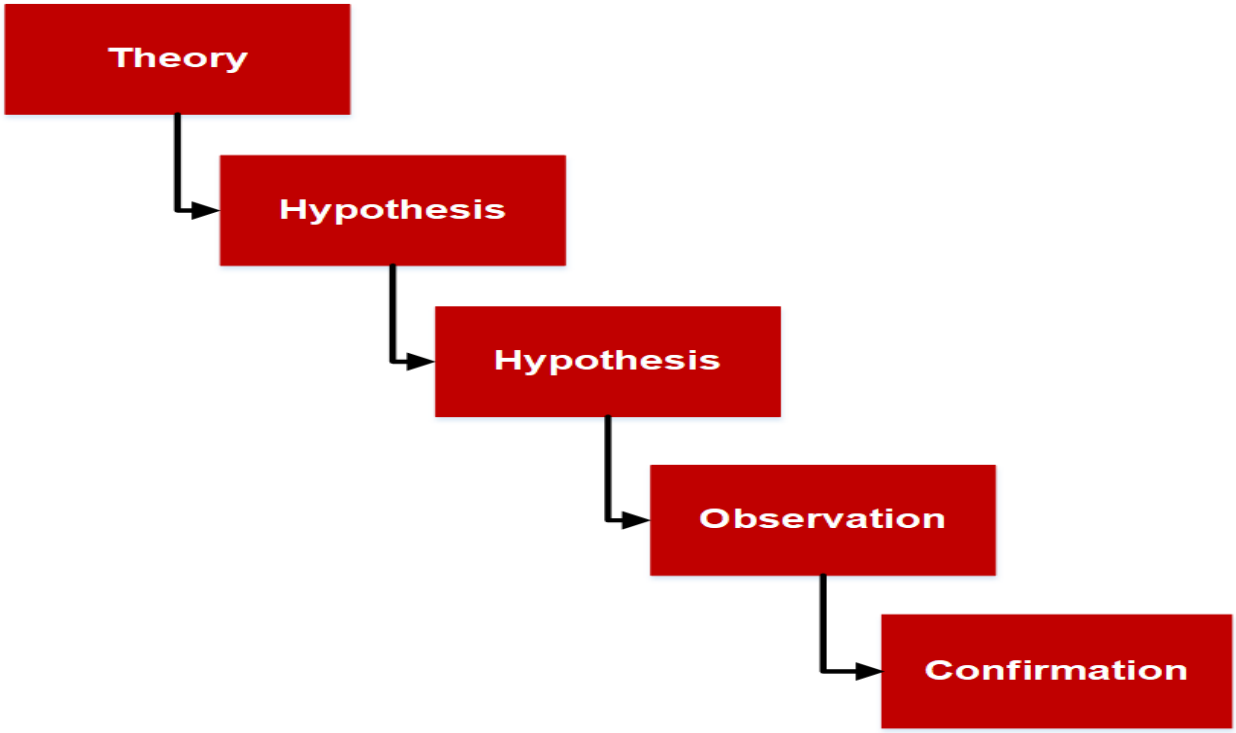

Figure 4-1 Deductive Approach: (http://www.socialresearchmethods.net)

4.4.2 Inductive Approach

This approach is drawn from the constructivist paradigm (Bryman & Allen, 2011). The inductive approach necessitates the researcher to avoid imposing their own belief about the context under study of the respondent (Banister *et al.,* 2011). The aim of the inductive researcher is to investigate how the respondent understands their own reality of the environment (Bryman & Allen, 2011).

The problem presented with inductive research is that of creating a methodology that is framed by the respondent rather than by the researcher. Therefore, data collection in this research approach is done through texts and interviews, whereby the response to a question is open (Feliser, 2010). Figure 4-2 illustrates the inductive research approach.

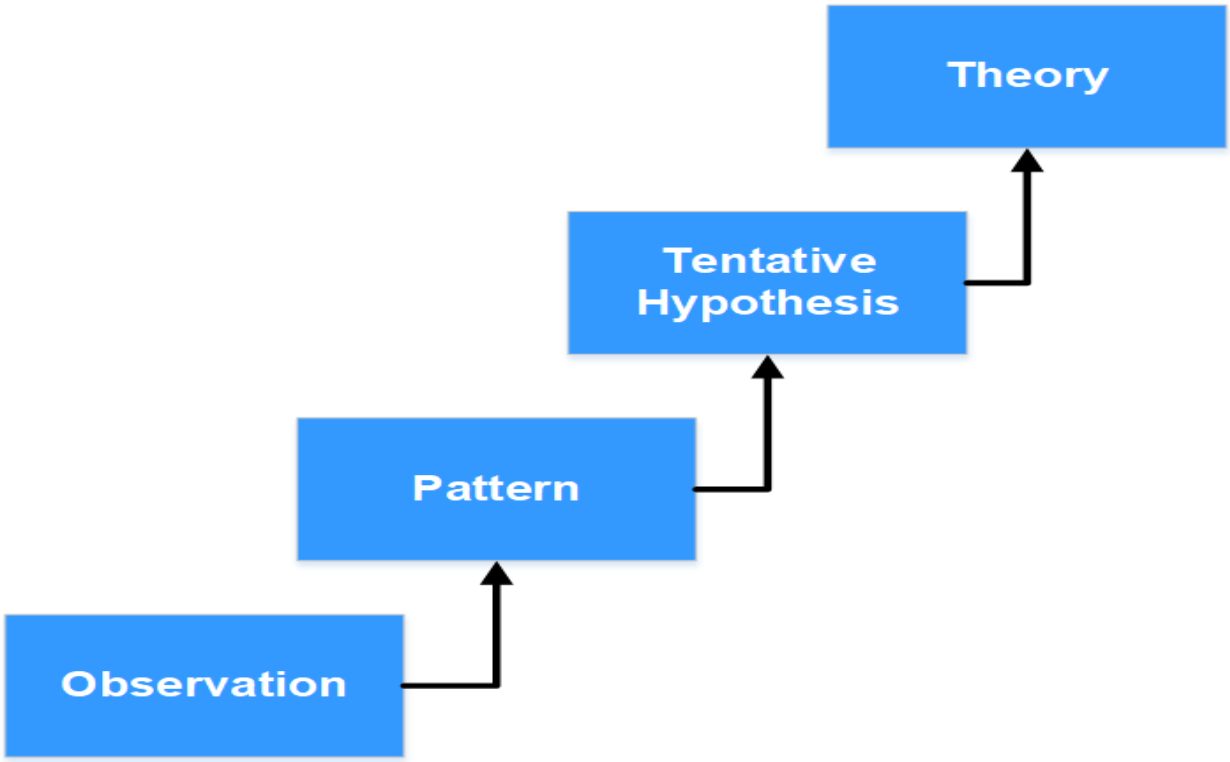

Figure 4-2 Inductive Approach Source: http://www.socialresearchmethods.net

4.4.3 Quantitative versus Qualitative

Quantitative research includes gathering information that is total, for example, numerical data, so it tends to be analysed in as fair a way as could reasonably be expected. It includes the testing of a hypothesis made out of factors, estimated with numbers, and is dissected utilizing factual methods. The objective of a quantitative research strategy is to consider and decide if the prescient speculation of a hypothesis remains constant (Frankfort- Nachmias & Nachmias, 1994).

Quantitative research strategies by contrast, are goal orientated, and yields solid research discoveries. By way of an example the number of inhabitants in the sample population, sample size, and sample units and number of inhabitants chosen for the investigation in the example.

Qualitative research investigates attitudes, behaviours and experiences, through techniques, like meetings or center gatherings. It is a methodology that can include relational, social, and cultural settings all the more completely (Solutes, 1990). It endeavours to get detailed opinions from participants.

Some investigation issues are subjective and must be addressed by employing appropriate qualitative research techniques, such as in-depth interviews and personal observation (Solutes, 1990). Qualitative research finds answers for questions that start with Why? How? In what way? Quantitative research answers questions that asks how? How much? How many? How frequently? To what extent?

In this study, a quantitative research approach was utilized. The quantitative research approach is chosen as it responds to the "what" and "why" inquiries. These questions clarify the causal impact of the issues that affect millennials acceptance and use of technology in State-owned Agencies. Table 4-3 lists the differences between quantitative and qualitative research design.

Table 4-3 Differences between Quantitative and Qualitative Design

Quantitative	Qualitative	
Principal orientation to the role of theory in relation to research	Deductive; testing theory	Inductive; generation of theory
Epistemological orientation	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructivism
Similarities	Use empirical observations to address research questions. Describe their data, construct their explanatory arguments from their data and speculate about why the outcomes they observe happened as they did; Minimise confirmation bias and sources of information in-validity (or lack of trustworthiness).	

4.4.4Justification for Using Quantitative Research approach

This approach relies on numerical data to test the relationship between variables, and the objective is to deduce patterns in the collected data which were used to draw conclusions

(Kalorama, 2007). Karlsson *et al.,* (2010) added that studies of this nature use quantitative research to test the theories about realities by looking at the cause and effect.

Additionally, the goal of quantitative research is to explain the relationship that exists between variables being tested in the underpinning theories. This study, therefore, uses the quantitative research approach and adopts three different types of quantitative scales used in the design of the questionnaire (used for data collection). These scales include:

- Nominal data – which describes categories, for example, gender;
- Ordinal data – which are numbers that are assigned to a quantitative scale; and
- Interval data – this is similar to ordinal data, but the measurements are made against a quantitative scale.

Quantitative approaches dominated the early tradition of research; they are in fact called the 'first wave'. They use standardised measures and statistical techniques, i.e. 'hard' methods, to analyse sophisticated numerical data in search of concrete evidence to test objective theories and examine the relationship among variables using scientific principles (Creswell, 2015).

The major characteristics of quantitative research are a focus on deductive methods of reasoning and explanation, prediction using standardised data collection, and statistical analysis methods. (Chakraborty *et al.,* 2013). Using open-ended and closed-ended questionnaire. In this process, it was important to describe the questions in the questionnaire and the reason for asking the questions.

4.4.5 Paradigms

The quantitative research is usually associated with the positivist paradigm that is linked with natural sciences. As such the researcher's preconceptions do not influence the research; it is the objective facts and empirical evidence that matter. The strength of this approach is that it is suitable for testing and validating the already constructed theories through numerical data, thus allowing generalised conclusions to be made.

4.4.6 Data Collection

Data was collected using a secure web-based survey for purposes of this study. Gang and Ravichandran, (2015) contends that employing a web-based survey has psychometric qualities similar to those of collecting physical data. Employing web-based surveys over surveys that are documented on paper has the following advantages:

- Costs for conducting web-based surveys are far lower than paper-based surveys;
- The researcher saves time because they do not have to physically follow up with survey respondents. They simply send out electronic reminders.
- The researcher can reach a wider audience and is not limited by geographic constraints. Hsu *et al.,* (2007) and Höhne and (Schlosser, 2017) are convinced that web-based surveys achieve much higher response rates.
- Researchers are able to obtain quicker turnaround times, since respondents complete these surveys online at their leisure.
- These surveys allows the researcher to similarly collect para data.

Web-based by contrast also have a number of associated disadvantages. Respondents can for example distort the quality of data, by hiding or falsifying information. They may alternatively lack knowledge to answer the relevant questions (Gravetter & Forzano, 2012). Web-based surveys further have response time outliers. This arises due to disparities in response times of survey respondents (Höhne & Schlosser, 2017).

Höhne & Schlosser, (2017) recommends that response times which lie below or above the threshold should ideally not be considered. The results of web-based surveys are further impacted by biases from late and non-responses from respondents (Mueller, 2014). In this regard, researchers are unable to anticipate, whether respondents would have answered in the same way as those who have responded (Mueller, 2014). These limitations are generally specific to web-based surveys.

Standardised questionnaires rarely capture what is important to some respondents. Especially when considering experiences, attitudes, orientations and circumstances. Surveys have the following deficiencies:

- They do not deal with social life given that the researcher fails to develop an understanding of the present situation in which participants encounter themselves.
- Modifying the survey during the research investigation is difficult, even though the research becomes aware of new associations or constructs. For this resan surveys are inflexible.

4.4.7 Theory Testing versus Building

Quantitative research is similarly related with hypothesis testing as opposed to theory construction. Quantitative research makes use of deductive techniques for inferring. Theory is applied to arrive at hypotheses, which is subsequently used to prove or refute the hypothesis. Therefore it is known as the theory testing approach. In view of the gathered data, the hypothesis is accepted (acknowledged), rejected (dismissed) or altered (Easterby-Smith *et al.,* 2012; Saunders *et al.,* 2009; Bryman & Chime, 2007).

4.4.8 Logic of Reason

Quantitative research employs deductive reasoning. It starts by identifying theories to guide the study and illustrate how the theories relate to the research problem by using observations or data (Imenda, 2014). As a deductive approach is 'theory guided' it is said to be a 'top-down' approach, as theory generates a hypothesis to be tested by using ground data.

The principal data collection techniques used in the quantitative approach includes experiments and surveys. The data is interpreted independently from the researcher's personal position. It is a hypothetical-deduction approach that allows for statistical generalisation of findings (Guba & Lincoln, 2012).

4.5 RESEARCH STRATEGY

This section discusses the research strategy used in the study. How survey strategy fieldwork and closed-ended questionnaires are used to augment the outcome of the

study is explained in this section. Thus, the section continues with the discussion of how the survey was carried out.

A research strategy is a plan that a researcher uses to gather and examine the data (Saunders *et al*., 2009). There are various ways in which a study investigator can gather data from research participants, such as using case studies, experiments, grounded theory, surveys, ethnography, action research, as well as archival research (Saunders *et al*., 2009).

4.5.1 Survey Research Strategy

This study emaployed survey stratergy. A survey is chosen as a research strategy in this study. This strategy helps in establishing relationships amongst constructs, in this study. Saunders *et al.,* (2009), contends that deductive research works well with the survey research approach. This study confirms that the survey research strategy is mostly suitable to address a number of questions, especially the what and the why?

In this instance, the survey strategy provided statistical data that is explanatory, with respect to the acceptance and use of HRIS. Moreover, the survey research strategy allowed the researcher to gather comparative types of data, from numerous research participants. The following section discusses other research strategies typically employed in HRIS studies.

4.5.2 Case Study Strategy

There are a number of case study classifications. Yin, (2013) notes three categories of case studies that are exploratory, descriptive, and explanatory. First, descriptive case studies set out to describe the natural phenomena that occur within the data in question, for example, how a reader uses different strategies and how they are used by the reader. The researcher's objective is to define the data as it occurs. Pope *et al.,* (2000) infers that descriptive case studies can be in a narrative form.

The challenge of a descriptive case study is that to support the description of the phenomenon or story, the investigator must start with a descriptive theory. If this fails,

there is the chance that there will be no rigor in the description and that there may be issues during the project. Secondly, exploratory case studies are designed to investigate any phenomenon in the information that is of concern to the researcher. For example, a researcher undertaking an exploratory case study on the reading process of an individual, may ask general questions.

4.1.1.1 Advantages of Case Studies

There are variety of benefits in using case studies. First, the examination of the data is often conducted inside the context of its use (Yin, 2013). In other words, within the situation in which the activity occurs. A case study may for example focus on the process, by which a subject understands an authentic text.

Case studies are helpful in research since they permit researchers to analyse data at the micro level. As an alternate to quantitative or qualitative research, case studies may be a sensible answer, where large sample populations are difficult to obtain (Yin, 2013).

4.1.1.2 Disadvantages of Case Studies

In spite of the associated benefits of case study research, a number of criticism has been levelled against. Yin (2013) discusses three kinds of arguments levelled against case study research. First, case study research is often accused of a lack of rigour. Yin (2013) further contends that “too many times, the case study investigator has been sloppy, and has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions”.

Second, case research offer little or no foundation for scientific generalisation considering they use a small variety of subjects, a few performed with best one subject. The question often raised is “how can you generalise from a single case?” (Yin, 2013).

Third, case studies are frequently tagged as being extensively long, complex to undertake, and generates a voluminous amount of documentation (Yin, 2013). Specifically, case studies of ethnographic or longitudinal nature can generate a lot of data

over an undefined time period. The risk comes when the data are not organised and systematically sorted.

A popular criticism of the case study method is its dependence on a single case study which makes it hard to achieve a general conclusion (Creswell, 2015). Due to the restricted sampling instances. Yin, (2013) regarded case methodology as being microscopic.

Notwithstanding these criticisms, the case study method continues to be deployed by scientists, especially in real-life research of social issues and issues. Case studies are commonly recorded in the literature from diverse disciplines and domains.

4.5.3 Ethnographic strategy

Understanding human behaviour poses a formidable challenge to social scientists as each person is different from all others in terms of outlook, genetic makeup, attitude, thought process and above all behaviour (Pope *et al.,* 2000). Collecting, analysing and interpreting the quantitative data in terms of numbers and quantities is not sufficient as the reality experienced by the respondents remain untouched while understanding any social probe Under such circumstances, for understanding human behaviour ethnographic research seems to be pertinent and very useful as it involves holistic approach m and the complex human behaviour (Leich *et al.,* 2009).

Collecting high quality data through ethnographic research always concentrates on a researcher's ability to interact within the community the researcher is studying and to observe the behaviour of its members. The idea is usually to see how people "make sense" out of their daily activities, actions and decisions (Schwartz-Shea & Yanow, 2013).

Similarly, unlike quantitative data in the forms of numbers ethnographic interpretations involve interpreting people's socially sanctioned and non-sanctioned behaviour as they appear out of the empirical field work research data in the form of words, texts, narratives, notes and so on (Pope *et. al.* 2000).

4.1.1.3 Advantages and Disadvantages of Ethnography strategy

Conducting ethnographic research can be time consuming. It requires fieldworkers to spend sufficient time in order to be to be accepted into a specific social system and then observe and reliably interpret the social relations which boost in that precise environment, as an insider (Robson *et al.,* 2016), 'and so as to recognise different people's personal worldview' (Robson *et al.,* 2016); it is also prudent 'to regard the everyday as unfamiliar' (Creswell, 2015).

4.5.4 Action Research strategy

Robson *et al.,* (2016) narrates that Kurt Lewin's explanation: "There's nothing as down to earth as a great theory", shaped the premise of his research approach, which was later known as 'action research'. In spite of the fact that broadly acknowledged as an important investigate strategy, activity investigate is caught on and deciphered in an unexpected way by analysts, and so diverse perspectives may be underscored.

Saunders *et al.,* (2011), action research explicitly focuses on action, while endorsing change. Chakraborty *et al.,* (2013) asserts that action researchers adopt a more "activist view" by transforming the present in order to derive a different future". Saunders, *et al.,* (2009) contends that researchers who employ action research, not only describes, understands and explains the problem, but also changes the problem situation, while monitoring the results.

When is action research suitable? Action research provides the opportunity to research the recognised important and critical issues. It also promotes the improvement of basic and intelligent thinking, while investigating practical challenges (Deci & Ryan, 2011).

An assortment of types of activity research have advanced over the past few decades (Chakraborty *et al.,* 2013). However, most adopt a methodical, iterative approach embracing problem identification, action planning, implementation, evaluation and reflection. The insights gained from the initial cycle feeds into planning of the subsequent cycle. The action plan is adapted and research process repeated.

Action research as an ongoing technique is not complete after one goes once through a cycle. As a substitute, it is an ongoing method (Saunders, *et al.,* 2009)). The cycles following the preliminary one include revising the change to ensure that the outcomes (goals) are met. It further involves amending and imposing planned action steps, and watching and again evaluating the outcomes of these actions, and in so doing achieving improvements.

Chakraborty *et al.,* (2013) contends that in action research a "single loop of planning, acting, observing and reflecting is only the beginning". He further argues that if the process fails to continue, it is no longer action research. However, it is instead "arrested action research". Chakraborty et al., (2013), argues that if a researcher identifies the problem based on diagnosis or alternatively reflection; it sets the scene for planning, taking action, and observation. In this way the researcher ensures that the problem is solved. This is essentially problem solving.

4.5.5 Grounded Theory stratergy

According to Friese (2014) grounded theory is an inductive comparative methodology which provides systematic guidelines for collecting, synthesising, analysing and conceptualising qualitative data to generate theory construction. It is most useful when investigating people's understanding of the world, and it relates to their social context. Saunders *et al.,* (2009) applied grounded theory to explain man-made catastrophes like fires and industrial accidents. He further analysed various aspects which constitute people's experiences about chronic illness. Deci *et al*., (2007) on the other hand, investigated the relationship between employees and adults with extreme learning disorders.

4.5.6 Experimental Research Design

Experimental research designs are the essential methodology used to examine causal (cause/impact) connections and to ponder the connection between one variable and the other (Keppel, 1991). This is a conventional kind of research that is quantitative in nature. To put it plainly, scientists utilize trial research to look at least two gatherings on at least one gauges.

In these plans, one variable is controlled to check whether it affects the other variable. Experimental research designs are utilized along these lines to answer speculations. A theory is a testable explanation that is detailed by the specialist to address a particular inquiry (Neuman, 2016). The researcher list structures an exploratory investigation which will at that point support or invalidate the hypothesis (Neuman, 2016).

4.5.7 Exploratory Research Design

Exploratory research, like confirmatory research, must start with an unequivocal theory and clear and explicitly detailed theories. This is because assuming positionality and favouritism of research means, most importantly, that a pure investigation of reality is impossible, in the same way that a researcher's personality and cultural background are inconceivable (Popper, 2002).

The objective of exploratory research is to plan issues, explain ideas, and structure speculations. Popper, (2002), the investigation can start with a writing search, a center gathering talk, or contextual analyses. In the event that a study is led for exploratory purposes, no endeavour is made to inspect an irregular example of a populace; rather, specialists directing exploratory research typically search for people who are proficient about a subject or procedure.

In contrast to corroborative research, exploratory research does not target testing these speculations, since they can't be demonstrated, as appeared as (Popper, 2002). Exploratory research rather asks how much a hypothesis and speculation can clarify, how well it can clarify it, or how significant and productive a clarification is Popper, (2002).

Exploratory research ordinarily looks formulating hypothesis instead of testing them. Information from exploratory investigations will, in general, be subjective. Models incorporate meetings to generate new ideas, interviews with specialists, and presenting a short study on a person to person communication site (Popper, 2002). The present study was also exploratory in design.

4.5.8 Descriptive Research Design

Descriptive studies have more rules. They depict people, products, and situations (Denzin & Lincoln, 2008). Descriptive studies, for the most part, have at least one or more research questions. However by and large they are not driven by organised research theories. Since this sort of research often plans to describe the characteristics of populations, dependent on data gathered from samples.

It often requires the use of probability sampling techniques, for example simple random sampling. Data from descriptive research might be qualitative or quantitative. Quantitative data presentations are often limited to frequency distributions and summary statistics, such as averages. Customer satisfaction surveys, presidential approval polls, and class evaluation surveys, are instances of descriptive research studies.

4.5.9 Explanatory Research Design

The main role of explanatory research is to clarify why phenomenon occur and to anticipate future events (Charles, 2014). Explanatory research are portrayed by research hypothesis that determine the nature and bearing of the connections between or among factors being contemplated. Probability sampling is regularly a prerequisite in explanatory research given that the objective is frequently generalise the results to the population from which the sample is chosen.

The data are quantitative and often require the use of a statistical test to set up the validity of the relations (Friese, 2014). For instance, explanatory survey research may explore the elements that add to consumer loyalty and decide the general load of each factor or try to model the factors that lead to shopping basket relinquishment. An exploratory survey captured on a social networking site may reveal that a company's clients are unsatisfied (Charles, 2014). A descriptive study comprising an email survey sent to a random selection of clients who purchased products in the previous year may report the type and extent of dissatisfaction (Charles, 2014). The explanatory research endeavoured to see how various variables are adding to client dissatisfaction.

The present study also followed the explanatory design in addressing why individuals are using or not using human resource information systems within the South African state-owned angencies.

4.1.1.4 Unit of Analysis

Csikszentmihalyi & Larson (2014) claim that unit of analysis should be used in an appropriate standardised research setting. The unit of analysis can be seen as the important entity type being studied, for which facts are gathered (Creswell, 2015). Yin, (2013) recommended a generic guide that can be employed to decide on the analysis unit, by reflecting on how the research questions are defined or stated.

In this study, the research questions make clear references to grasp members' use and effective use of human resource information systems. . This study follows the steps of studies in Information System that have examined the use of technology in various contexts. The unit of analysis was the individual; that is, individuals using human resource information systems within the state owned agencies.

4.1.1.5 Population

South African State-owned Agencies (Schedule 2) have a population of approximately 171751 individuals. However, not all of the 16 9551 of the employed use or make use of the human resource information systems. The individuals in the SOA's are categorised as executives, management, practitioners, and administrators. Table 4-4 shows the various State-owned Agencies where data collection for this study was carried out.
In Table 4-4, the number of State-owned Agencies, and the population of each agency is shown. The information on the area and population size of (Schedule 2) South African state are from www.dpe.gov.za available: https://PFMA Schedules 1,2,3, A-D State accessed on 30/07/2017.

Table 4-4 Schedule 2 State-owned Agencies

All Schedule 2 Entities Grouped by Sector of Major Public Agencies	Population	Sector
Aviation Sector		
1.Airports Company of South Africa Limited	1 734	Aviation
2. South African Airways (Pty) Limited	8,525	Aviation
3. South African Express (Pty) Limited	1,136	Aviation
Defence Sector		
1. Armaments Corporation Of South Africa Limited	987	Defence
2. DENEL(Pty)Ltd	6,931	Defence
Energy Sector		
1.ESKOM	41,787	Energy
2. CEF (Pty) Ltd	2184	Energy
Forestry Sector		
1.South African Forestry Company Limited	7 568	Forestry
Finance Sector		
1. Land and Agricultural Development Bank of South Africa	565	Finance
General Sector		
1 Independent Development Trust	355	General Development
Industrial Development Corporation of South Africa Limited	765	General Industrial Development
Mining Sector		
1. Alexkor Limited	3 245	Mining
Nuclear Sector		
1. South African Nuclear Energy Corporation Limited	54	Nuclear
Telecommunication Sector		
1 South African Post Office Limited	23,820	Telecommunication
Telkom SA Limited	19 197	Telecommunication
South African Broadcasting Corporation Limited	756	Telecommunication
Broadband Infrastructure Company (Pty) Ltd	657	Telecommunication
Transportation Sector		
1 Transnet	49,078	Transportation
Water Sector		
1 Trans-Caledon Tunnel Authority	207	Water Supply
Total	**16 9551**	

4.1.1.6 Sampling Approach

There are three types of sampling categories, which can be distinguished as probability, quasi-probability, and non-probability sampling (Saunders, et al., 2009). While probability sampling is commonly associated with survey-based research strategies, this method is appropriate for this study.

Sampling requires extracting a representative number of participants from the overall population. Sekaran (2003) contends that by understanding a sample's characteristics, the research is able to better generalise it to the overall population.

This study was carried out within South African State-owned Agencies. Quantitative data was collected using questionnaires through stratified sampling. Stratified sampling was employed to select participants who use HRIS within the different State-owned Agencies. These strata are categorised as executives, management, practitioners, officers and administrators This was followed by a random sampling within the strata; the sampling methods helped the study in the selection of individuals at various State-owned Agencies.

4.1.1.7 Data Collection Procedure

Cross-sectional data were collected from executives, managers, practitioners, officers and administrators in State-owned facilities. Questionnaires were given to individual's working at various state facilities. The questionnaires were self-administered, and each of the questionnaires was coded per each State-owned agency.. The questionnaire's code appeared at the bottom most corner of the questionnaire to differentiate of the various State-owned agencies.

A follow-up study, comprised of questions that were open-ended, was carried out to give context to the quantitative data and results. The research instrument, questionnaires, were dropped off at the various state-owned agencies' offices and collected after two weeks, to give potential participants enough time to complete the survey. The follow-ups were done with the managers who in turn communicated with the participants.

4.1.1.8 Measurement Instrument

This section shows how the scale development was done and how pre-testing of the research instrument was handled.

4.1.1.9 Scale

This section discusses scale development for the data collection tool for validating the research model for effective use of Human Resource Information Systems by individuals in South African state-owned agencies. The development of the scale used in the questionnaire relied on previously established scales used in the measurement of users' adoption of technology (Venkatesh *et al.*, 2003:297 & 2012) for which the scale was initially developed in State-owned settings; in addition, there is a need for careful assessment of the content of the questionnaire, the validity of the scale and the significance of the measurement items.

The variables depicted in the UTAUT model, according to Venkatesh et al. (2003, 2012) consist of performance expectancy, effort expectancy, social influence, facilitating conditions, behavioural intention, and intention to use technology. In the 2012 model (Venkatesh *et al.,* 2012:221), users' adoption of technology is described by the following variables: hedonic motivation, price value, habit, and use.

These variables have little or no impact on the responses in this study, as the context is in the consumer acceptance and use of technology. All the variables are measured using multiple items on a 5-point Likert scale (Venkatesh *et al.*, 2003). A Likert scale is frequently used in business research when measuring perceptions, adoption or attitudes of users or consumers. This is because a Likert scale tends to be precise; however, too many points on the Likert scale may make it difficult for participants to distinguish the different classifications (Hair *et al.,* 2009).

A questionnaire with 42 items has been designed to collect the data from participants' regarding acceptance and use and effective use of HRIS for Human Resource delivery. The 42 items captured questions to measure acceptance and use factors such as self-

efficacy, performance expectancy, effort expectancy, facilitating condition, social influence and behavioural intention.

To measure effective use factors such as adapting surface structure, adapting physical structure, transparent interaction, representation fidelity, informed action, and learning were used. All items used a 5-point rating scale (anchors of 1: Completely disagree, 2: Disagree, 3: Not disagree/agree, 4: Agree, and 5: Completely agree).

4.1.1.10 Pretesting

The stages involved in carrying out the pre-testing of the data collection instrument are discussed below.

Stage 1 Questionnaire Pre-test

The first round of the scale purification was done on a five-point Likert-type scale. Subsequently, the questionnaire was pre-tested following the recommendation of Patel *et al.* (2011). This pre-testing was carried out, and slight adjustments made in order to improve the readability and clarity of the questionnaire. Ten of the questionnaires were pre-tested. Corrections were made to the answered questionnaires based on the pre-test, and the questionnaires were self-administered for the actual data collection.

4.1.1.11 Questionnaire Pre-test

As a follow-up to the Stage 1 pre-test of the questionnaire, a pilot test of the questionnaire was conducted to evaluate the appropriateness of the questions and also to purify the scales. Following the recommendation of Hair *et al.* (2011), the range of questions for each of the variables is limited to between three and six questions.

A pre-survey was conducted by distributing the altered questionnaire to about 130 postgraduate students studying Information Systems at Tshwane University of Technology and to a postgraduate class in the Management Faculty at the University of South Africa.

4.1.1.12 Main Survey

The process for accessing the potential participants began with the development of the research instrument, the questionnaire. The questionnaire was transferred to a Web based application called “surveymonkey”. The application created a URL link. The next step was to contact the State-owned agencies which have granted permission to conduct the study with them as participants.

Each agency has a gatekeeper, through him/her, the URL link was shared with. The gatekeeper, in most cases was an HR senior manager or executive. The surveymonkey link was sent to the gatekeeper so that they could disperse to all potential participants in their agency. A potential participant meant anyone who has access to or currently uses HRIS. The gatekeeper would then, through their email address system, send the URL link , with a covering email that explains what the study is about together with the informed consent to potential participants.

Upon receipt of the URL link, potential participants then accessed the research instrument and completed the survey. Who received the research instrument was randomly selected, by the gatekeepers. The study did not actively select the participant, except stating the inclusion and exclusion criteria for participating. The inclusion criteria was that the individual should have access to or use HRIS, within the agency.

4.5.10 Time Horizon

This investigation is best portrayed as a cross-sectional examination. A cross-sectional investigation was characterized by (Khalil & Elkordy, 2005) as an examination wherein the unit of examination is seen at one point in time. At the end of the day, information for the examination will be accumulated just once, maybe over a time of days or weeks or months, so as to respond to the exploration questions.

This is in contrast to a longitudinal study where the unit of examination can be explored over a significant stretch of time. In this examination, because of requirements of time

and financing and the kind of study being explored, a cross-sectional investigation was discovered suitable.

4.5.11 Data Preparation

This section is discussed as follows: reliability of the measurement instrument and the validity of the measurement instrument.

4.5.12 Reliability of Measurement Instrument

Reliability alludes to the likeness of results given by independent but equivalent proportions of the same object; construct, or index of consistency (Heuer & Pherson, 2011). Statistically, this investigation utilised correlation values, for example, Cronbach's coefficient alpha (α), Composite Reliability (CR) and Average Variance Extracted (AVE), in order to determine the reliability of the measurement.

4.5.13 Validity of Measurement Instrument

Validity has reference to the degree to which differences are observed based on scale scores between objects on the characteristics being measured as opposed to systematic or random errors. This was conducted in two stages, namely convergent validity and discriminate validity. Correlations such as factor loadings and AVE values were calculated in order to measure convergent validity. Discriminate validity was determined by way applying AVE values versus Shared Variance, and an Inter-Construct Correlation Matrix statistical methods.

4.5.14 Statistical Procedures

Data is transformed into valuable information by way of applying suitable statistical methods. The researcher makes use of statistical analysis to organise, summarise, and describe research observations. Statistical methods were employed to either identify the characteristics of such observations, or alternatively draw correlations between two or more phenomenon (Pallant, 2005).

SPLS was the statistical package, applied to analyse the variables tested by way of a questionnaire and survey, to determine the use of HRIS by individuals in state-owned agencies. Methods employed in the nonparametric analysis have proven that these methods ultimately yield rigorous results (Battacherjee, 2012).

4.1.1.13 Data Analysis

Data analysis techniques were carried out in three stages using Smart Partial Least Square version 3. The collected data was prepared for analysis, and the descriptive data analysis was used to examine problems relating to outliers and missing data sampling distribution.

4.1.1.14 Sample Distribution

Sampling distribution is the value of sample statistics calculated for each sample drawn extracted from the overall population based on the sample plan (Cole *et al.,* 2007). A normal distribution is represented by a typical bell-curve which is symmetrical which measures the centrality of data. Sample distribution of the mean, is a normal distribution, for large samples (n=30) or more. Normality is often determined by skewness or kurtosis (Wolff *et al.,* 2010).

4.1.1.15 Missing Data

The term missing data is often applied in instances where respondents ambiguously or incorrectly record their answers. Missing responses essentially represent the values of a variable which is unknown. Non responses are recorded in cases where a respondent refuses, or is unable to answer direct questions, or items due to content, form, or anticipated effort required.

Missing data creates a problem, especially where the proportion of the missing data exceeds 10%, of the collective responses Bhattercherjee, 2012). A neutral value was created for missing responses from the mean of the data. This was done, to ensure that

the mean and the correlation of variables, remain unaffected. An alternative to treating missing responses, is substitute and imputed response. Cole *et al.,* (2007) recommends applying the respondent's pattern to responses to other questions, to impute of calculate, a suitable response to missing questions.

Case wise deletion can further be applied as mitigation to missing responses. In this instance respondents with missing responses are rejected (Hair *et al.*, 2011). Pair-wise deletion can similarly be applied. Respondents having missing responses are not instantly discarded. Instead, each calculation for individual cases or respondents who have completed all responses, are considered (Wolff *et al.*, 2010).

4.1.1.16 Model Measurement Validation

Structural Equation Modelling (SEM) applying SPLS was employed to determine measurement properties, while testing the research model. SEM evaluated the structure of interrelationships using multiple regression equations for the proposed HRIS model.

SEM is often referred to as covariance structure analysis, latent variable analysis, and causal modelling. SEM is employed in single cross-sectional data which is collected during surveys at a single point in time. Pollard, (2005) contends that SEM typically provides evidence of systematic covariation. Tabachnick and Fidelli, (2007), reported that SEM is employed as a confirmatory rather than exploratory technique.

4.1.1.17 Model Fit Assessment

Selecting an appropriate sample size is essential for both quantitative and qualitative research. With quantitative research, the sample size affects the statistical results. Hair *et al.,* (2011) emphasises that small samples make statistical analysis insensitive, while too large samples, yield overly sensitive results. In the case of the SEM technique, which is the principle technique used for analysing data and hypothesis testing, a sample size of 200 is recommended. Where the model is excessively large or complex, a larger sample can be employed.

A two-step process was applied to collect data. Precision of multi-items of variables were first measured and analysed. Evaluation of the research model and hypotheses testing followed subsequently. The SEM technique was applied as a model validation tool, in both data analysis stages.

Confirmatory Factor Analysis (CFA) was additionally employed as a model for measuring and confirming validity by of the SPLS. Assessing fitness of the model was achieved by calculating the following model fitness indicators: chi-square value over degree of freedom (χ^2/ df), the values of Goodness-of-Fit Index (GFI), and the Root Mean Square Error of Approximation (RMSEA).

4.5.15 Study Limitations

The validation of the model for effective use of Human Resource Information Systems by individuals is limited to the South African State-owned Agencies (Schedule 2 agencies). In South African State-owned Agencies there are approximately 16 9551 individual's working in the different areas. It was impossible for this study to sample the total population of management and Human Resource practitioners working at different facilities in the state.

Also, the data collection was done with the assistance of the managers at these various agencies making it difficult to have total control of the data collection. In addition, the understanding of the questions in the questionnaire varied based on the fact that individuals comprise of different categories, such as executive, managers, practitioners, officers and administration.

The difference in the job responsibility for each of these categories of individuals influences the understanding of the questions in the questionnaire. Questionnaire items applied a 5-point rating scale as follows: 1: Completely disagree, 2: Disagree, 3: Not disagree/agree, 4: Agree, and 5: Completely agree.

4.5.16 Ethical Considerations

As with all social research, surveys should be carried out in ways designed to avoid risks to participants, respondents, and interviewers (Fowler Jr., 2009), in this study, ethical procedure was duly followed. Adherence to ethics is pivotal in any research undertaking, therefore, the ethical clearance assures the participants for the data collection purposes about the right to participate, protection of the participants' privacy and protection from harm. Research ethics worth considering in this study are discussed and addressed next. Participants were assured of the confidentiality and privacy of their responses while their right to participate or withdraw from the survey was well respected.

4.5.16.1. Right to Privacy

The researcher explained to participants at the onset, that they have the right not to participate, or withdraw should they not wish to further participate. They were additionally advised, that all information would be presented anonymously. Responses to the completed questionnaire will not be shared with any unauthorised persons. All information provided by participants to the study, will remain confidential, and used exclusively for purposes of this research study.

4.5.16.2. Informed Consent

The goals and objectives of the study, were first shared with all participants. A covered letter introduced the research study which was shared with all participants. The researcher was available, to address any questions which participants required further clarity on. Participation was voluntary and the online questionnaire was self-administered. Participants could therefore opt out of the study at any given point.

4.5.16.3. Protection from Harm

Participants were fully informed about the nature of the study. They could therefore decide on their willingness to participate or not. Participants were further assured that they would

not be harmed in anyway, either physically or emotionally through their participation. They were assured that their participation was strictly anonymous.

Furthermore, the survey instrument gathered demographic data. This includes data about where the respondent works presently, the age of the respondent, employment title, and the number of years of experience. The hypotheses and the questions from the questionnaire are shown in Table 4-5.

Table 4-5 Hypotheses and Questionnaire Items

Hypotheses	Questionnaire Questions
H1: Performance expectancy positively affects individuals' behavioral intention to use HRIS.	I find HRIS useful in doing my job task. Using HRIS helps me accomplish my task more quickly. Using HRIS increases my job productivity. Using HRIS increases the chances of achieving tasks that are important to my job.
H2: Social influence positively influences individuals' behavioral intention to use HRIS.	Superiors at the company where I work influence my decision to use HRIS.
H3: Facilitating condition positively influences individual's behavioral intention to use HRIS.	I was trained to use HRIS. I have acquired the knowledge necessary to use HRIS. The work environment is conducive for me to use HRIS. There is a help desk to assist me when I have issues with HRIS. I get adequate help from the help desk when I have issues with HRIS.
H4: Individuals' behavioral intention positively influences acceptance and use of HRIS.	I have no choice but to use HRIS because the management enforces its use. I dislike being required to use HRIS. I use HRIS as much as I can in order to access useful data. I would like to use HRIS for even more tasks than I currently use it for.
H5: Self-efficacy positively affects ease of use in Individuals' acceptance and use of HRIS	I rely on manuals to use HRIS to do my job. I am confident in my competence to use HRIS. I can use HRIS without help from manuals. I need my colleagues to help me in order to use HRIS. I do not need my colleagues to help me in order to use HRIS.
H6: Effort expectancy positively influences individuals' behavioral intention to use HRIS.	I find using HRIS easy for my job task. I think HRIS is complex to use.

Hypotheses	Questionnaire Questions
	I think I will need more hours when using HRIS because it is complex. It takes me a lot of time to use HRIS. I devote a lot of energy to using HRIS.
H7: Intrinsic Motivation positively influences behavioral intentions to use HRIS	I am motivated using HRIS.
H8: Intrinsic Motivation positively influences the use of HRIS.	I am motivated using HRIS.
H9: Extrinsic Motivation positively influences behavioral intentions to use Human Resource Information Systems.	I am motivated using HRIS.
H10: Extrinsic Motivation positively influences the use of Human Resource Information Systems.	I am motivated using HRIS.
H11: Adapting physical structure influences individuals' learning to learn representation.	I can access HRIS easily using the hardware provided. It is easy to use the hardware provided with HRIS. It is difficult to use the hardware provided with HRIS. It is easy to take the hardware attached to HRIS to the place where I need it. I am more productive at work due to the ease with which I use the hardware provided with HRIS.
H12: Adapting surface structure influences individuals' learning to learn representation.	I can navigate easily through HRIS in order to perform my task. I can access the icons and menus easily from HRIS home page. I get assistance easily using the icons and menus on HRIS home page. I am well organised at work due to the ease with which I navigate in HRIS environment. I am more productive due to the ease with which I navigate in HRIS environment.
H13: Learning to learn representation influences individuals' informed action. **H14:** Learning to learn representation influences individuals' representation fidelity. **H15:** Learning to learn representation influences individuals' transparent interaction.	My learning/training helps me to use HRIS **better.** My learning/training helps me to use HRIS **more quickly.** My learning/training helps me to use HRIS **easily.** My learning/training helps me to provide **better** service. My learning/training helps me to provide **quicker** service. My learning/training helps me to provide service **easily.**
H16: Informed actions positively influence individuals' effective use of HRIS.	I get the information that influences my decision-making on my job from HRIS. I get the information that influences the service I render on my job from HRIS.

Hypotheses	Questionnaire Questions
	I understand when to apply the information I get from HRIS. I understand where to apply the information I get from HRIS.
H17: Effective Use positively influences individuals' transparent interaction.	The use of HRIS helps me provide better service. The use of HRIS helps me provide service more quickly. The use of HRIS helps me provide service easily. The use of HRIS impedes the human resources service and administration I deliver. It takes a lot of time to use HRIS which hampered human resources service and administration I deliver. I devote a lot of energy to use HRIS which hampered human resources service and administration I deliver.
H18: The relationship between acceptance and use is mediated positively by Intrinsic Motivation.	I am motivated using HRIS

The survey instrument requires that an individual's response should relate to experience and perception in the use of HRIS in HR service delivery as presented in Table 4-4. The diagrammatic representation of the final research model of this study is shown below. The model was derived from the Unified Theory of Acceptance and Use of Technology, the Task-Technology Fit, the Self-determination Theory and Representation Theory.

The research model suggests that the extent of use behaviour on Human Resource Information Systems can be measured on the behavioural intention to use HRIS. Effort expectancy, social influence, performance expectancy, facilitating conditions, Intrinsic Motivation and Extrinsic Motivation are forerunners of the behavioural intention to use HRIS. Intrinsic Motivation and extrinsic also have an effect on the use of technology.

4.6 SUMMARY OF THE CHAPTER

This chapter discussed the research methodology that was followed in the study. The discussion began with the research philosophy. The philosophy helps in the understanding of the context in this study. Discussions of the elements of the structure of critical realism dictate the methodology that was used in the study. The discussion started

with the research philosophy section; here the Interpretivism and positivism research philosophies were used to underpin the discussion.

The research approach section discusses the two research approaches frequently used in social science research; deduction research approach and inductive research approach. The research strategy section discusses the strategy used for data collection for this study; survey fieldwork as it was used for data collection, and the interview using an open-ended interview questionnaire. Other discussions in this chapter on methodology were the research design, time horizon, sampling and the sampling method.

Then the data collection and scale development proceed the discussion. In scale development, specification of domain, measurement items generation, categorisation, evaluation and pre-testing of the data collection instrument and ethical considerations wrap up the discussion in this chapter. Chapter Five will be presented next where the data analysis and presentation of results will be given.

CHAPTER 5: DATA ANALYSIS AND PRESENTATION OF RESULTS

5.1 PREAMBLE

The chapter presents results obtained from the study conducted. The statistical analysis is done using Smart Partial Least Squares version 3.0 (SPLS). Hypothesis are tested and evaluated statistically. The factor analysis and indicative reliability of measurement models are assessed in this chapter. Subsequently, determining the quality of the dimension model, the structural model is valid. Briefly, research comprised the individual's use of HRIS; a structural model investigation is done to detect this consequence.

5.2 ANALYSIS AND RESULTS

The section analysis the data and presents results obtained from the study conducted. The statistical analysis is done using Smart Partial Least Squares version 3.0 (SPLS). Hypothesis are tested and evaluated statistically. The factor analysis and indicative reliability of measurement models assessed in this study. Subsequently, determining the quality of the dimension model, the structural model is valid. Briefly, research comprised the individual's use of HRIS; a structural model investigation is done to detect this consequence. Table 5-1 lists the demographic distribution of participants.

Table 5-1: Demographic Distribution of Participants.

Variables	Aspect	Frequency	%	Valid (%)	Cumulative (%)
Gender	Female	132	62.6	62.6	62.6
	Male	79	37.4	37.4	100.0
Age	18 to 24	21	9.9	9.9	9.9
	25 to 34	70	33.0	33.0	42.9
	35 to 44	60	28.3	28.3	71.2
	45 to 54	56	26.4	26.4	97.6
	55 to 64	4	1.9	1.9	99.5
	Above 64	1	.5	.5	100.0
Experience	Less than 10 years	105	49.5	49.8	49.8
	10-20 years	83	39.2	39.3	89.1

Variables	Aspect	Frequency	%	Valid (%)	Cumulative (%)
	Above 20	23	10.8	10.9	100.0
Job Title	Engineer	3	1.4	1.4	1.4
	General managers	1	.5	.5	1.9
	HR administrator	1	.5	.5	2.4
	Junior accountants	21	9.9	10.0	12.3
	Modelling manager	1	.5	.5	12.8
	HR Managers	31	14.6	14.7	27.5
	Finance/Admin Managers	23	10.8	10.9	38.4
	HR officers	39	18.4	18.5	56.9
	Accountants	17	8.0	8.1	64.9
	Project officers	15	7.1	7.1	72.0
	Project Managers	10	4.7	4.7	76.8
	HR Executives	11	5.2	5.2	82.0
	IT help desk	14	6.6	6.6	88.6
	IT Managers	8	3.8	3.8	92.4
	Technicians	6	2.8	2.8	95.3
	Geologist	3	1.4	1.4	96.7
	Regional Managers	1	.5	.5	97.2
	Receptionist	1	.5	.5	97.6
	Admin Officers	3	1.4	1.4	99.1
	IR Advisors	1	.5	.5	99.5
	Senior/Legal Officers	1	.5	.5	100.0
Agency	IDC	49	23.1	23.2	23.2
	Eskom	66	31.1	31.3	54.5
	Alexkor	2	.9	.9	55.5
	Central Energy Fund	45	21.2	21.3	76.8
	DENEL	1	.5	.5	77.3
	Telkom	2	.9	.9	78.2
	IDT	2	.9	.9	79.1
	South African Express	1	.5	.5	79.6
	Transnet	1	.5	.5	80.1
	SAFCOL	1	.5	.5	80.6
	Land & Agriculture Development	5	2.4	2.4	82.9
	Broadband Infra structure	16	7.5	7.6	90.5
	SA Post office	1	.5	.5	91.0
	Trans-Cal tunnel	1	.5	.5	91.5
	SA Nuclear Corporation	1	.5	.5	91.9
	Armaments Corporation SA	1	.5	.5	92.4
	Air Traffic Navigation Services	1	.5	.5	92.9
	Air Ports Companies	1	.5	.5	93.4
	DBSA	1	.5	.5	93.8
	SAA	1	5	.5	94.3
	SANEDI	1	.5	.5	94.8
	Mine Health & Safety Council	2	.9	.9	95.7
	National Credit Regulator	1	.5	.5	96.2
	African Institute of South Africa	1	.5	.5	96.7
	Council for Geoscience	2	.9	.9	97.6
	HSRC	1	.5	.5	98.1

Variables	Aspect	Frequency	%	Valid (%)	Cumulative (%)
	Medical Research Council SA	1	.5	.5	98.6
	Mining Qualifications Authority	1	.5	.5	99.1
	National Nuclear Regulator	2	.9	.9	100.0

The data are presented thus: gender, in this demographical data, it is shown that the largest participants for this study are female representing 62.6% of the population while male participants are 37.4%. The age of the respondent followed the demographical data presentation, where the most represented age range between 25-34 years, and 33.0% of the total participants.

The table further presents the number of years' experience of participants and the most represented in this category is less than 10 years' experience. Individuals' specialisation demographical data was presented next, showing that the most represented participants are HR officers, at 18.5%. The participants' state agencies for data collection for this study are also presented in this table, and it was shown that participants working for Eskom are the most represented, at 31.3%.

5.3 DESCRIPTIVE STATISTICS

Descriptive statistics for the constructs are in Appendix A; stating if the participants strongly agree, agree, strongly disagree and disagree.

5.3.1 Descriptive Statistics for Constructs

Part 1 of the survey data analysis results are presented here. Appendix A lists descriptive statistics for representation theory listing the frequency, percentage, and valid percentage chosen by participants to the survey. The acceptance and use variables influencing participants' use of HRIS within state-owned agencies for developing countries are presented in the aforementioned Appendix. The influence is measured based on factors that contribute to the behavioural intention of individuals to use Human Resources Information Systems. The factors considered for the measurement are: performance

expectancy, effort expectancy, facilitating conditions, social influence and behavioural intention. The data showing the influence of these factors as shown in the appendix.

5.3.2 Demographic Presentation for Representation Theory

The result of the data analysis for Part 2 of the survey instrument is presented in this section. The questions asked in this part of the questionnaire collect data with respect to the Representation theory variable for effective use of Human Resources Information Systems. The data analysis is presented in Appendix A.

The Representation theory variables influence the participants' use of HRIS at various South African State-owned agencies, as presented in the aforementioned appendix. The influence is measured based on factors that contribute to the effective use of HRIS by individuals. The factors considered for the measurement are: adaptive physical structure, adaptive surface structure, learning, transparent interaction, representation fidelity, informed action and effective use. The data showing the demographic effect on descriptive variables or constructs are presented in the section that follows.

5.3.3 Analysis of Variance

Analysis of variance was evaluated using experience, age, agency and job title. T-test was assessed using gender. Table 5-2 lists gender constructs compared against the research constructs applied in this research study. It lists each construct, gender, sample size, mean, standard deviation and standard error. Table 5-3 similarly lists gender versus research constructs. However, the table lists frequency, significance, T-test, DF, significance, mean difference, and standard error.

Results expressed in Table 5-2 and Table 5-3 confirms that there are no noteworthy alterations with regards to gender, with the exception of SE. Their p-values (2-tailed Sig.) are greater than 0.05 thus confirming, there is no noteworthy change between the mean scores of males and females at a 95% confidence level and decision variable, with exception of SE.

Table 5-2: Gender versus Constructs.

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
PE	Female	132	4.2121	.58141	.05061
	Male	79	4.0338	.70528	.07935
EE	Female	132	2.0939	.78592	.06841
	Male	79	2.4228	.84185	.09472
FC	Female	132	2.2773	.77702	.06763
	Male	79	2.5063	.79475	.08942
SI	Female	132	2.2394	.72235	.06287
	Male	79	2.5063	.80118	.09014
BI	Female	132	2.0966	.60976	.05307
	Male	79	2.3576	.65741	.07396
AU	Female	132	2.0409	.68339	.05948
	Male	79	2.2177	.74503	.08382
SS	Female	132	2.0025	.74989	.06527
	Male	79	2.2785	.71697	.08067
AP	Female	132	2.4722	.94733	.08245
	Male	79	2.8650	1.02743	.11559
TI	Female	132	2.8207	1.22139	.10631
	Male	79	3.0802	1.16234	.13077
RF	Female	132	1.9848	.56433	.04912
	Male	79	2.1013	.63108	.07100
IA	Female	132	1.9040	.56552	.04922
	Male	79	1.9536	.62642	.07048
EU	Female	132	1.8384	.63035	.05487
	Male	79	2.0127	.69274	.07794
MI	Female	132	2.5076	1.16687	.10156
	Male	79	2.7342	1.16392	.13095
EM	Female	132	2.7557	1.17117	.10194
	Male	79	3.0791	1.17843	.13258
SE	Female	132	2.5208	.92930	.08088
	Male	79	2.7690	.86396	.09720
LR	Female	132	1.6919	.58483	.05090
	Male	79	1.8186	.68104	.07662

Table 5-3: Gender versus Constructs.

		Levine's Test for Equality of Variances		Independent Samples T-test for Equality of Means				
Construct	Variable	Freq	Sig	T	DF	Sig	Mean Diff	Std. Error Diff.
PE	Equal variances assumed	1.753	.187	1.989	209	.048	.17837	.08969
	Equal variances not assumed			1.895	140.511	.060	.17837	.09411
EE	Equal variances assumed	.015	.903	-2.864	209	.005	-.32885	.11483
	Equal variances not assumed			-2.815	155.416	.006	-.32885	.11683
FC	Equal variances assumed	.013	.909	-2.055	209	.041	-.22906	.11148
	Equal variances not assumed			-2.043	161.333	.043	-.22906	.11211
SI	Equal variances assumed	.192	.662	-2.493	209	.013	-.26694	.10707

		Levine's Test for Equality of Variances		Independent Samples T-test for Equality of Means				
Construct	**Variable**	**Freq**	**Sig**	**T**	**DF**	**Sig**	**Mean Diff**	**Std. Error Diff.**
	Equal variances not assumed			-2.429	151.068	.016	-.26694	.10990
BI	Equal variances assumed	.016	.901	-2.922	209	.004	-.26100	.08933
	Equal variances not assumed			-2.867	154.595	.005	-.26100	.09104
AU	Equal variances assumed	.009	.924	-1.758	209	.080	-.17681	.10057
	Equal variances not assumed			-1.720	153.201	.087	-.17681	.10278
SS	Equal variances assumed	.179	.673	-2.630	209	.009	-.27596	.10495
	Equal variances not assumed			-2.659	170.144	.009	-.27596	.10376
AP	Equal variances assumed	.041	.839	-2.823	209	.005	-.39276	.13912
	Equal variances not assumed			-2.766	153.852	.006	-.39276	.14199
TI	Equal variances assumed	2.170	.142	-1.520	209	.130	-.25946	.17065
	Equal variances not assumed			-1.540	170.753	.126	-.25946	.16853
RF	Equal variances assumed	.921	.338	-1.387	209	.167	-.11642	.08394
	Equal variances not assumed			-1.348	150.058	.180	-.11642	.08634
IA	Equal variances assumed	.301	.584	-.591	209	.555	-.04955	.08378
	Equal variances not assumed			-.576	151.227	.565	-.04955	.08597
EU	Equal variances assumed	3.546	.061	-1.872	209	.063	-.17427	.09308
	Equal variances not assumed			-1.828	152.203	.069	-.17427	.09531
MI	Equal variances assumed	.953	.330	-1.366	209	.173	-.22660	.16583
	Equal variances not assumed			-1.367	164.599	.173	-.22660	.16572
EM	Equal variances assumed	.839	.361	-1.937	209	.054	-.32343	.16698
	Equal variances not assumed			-1.934	163.462	.055	-.32343	.16724
SE	Equal variances assumed	4.977	.027	-1.927	209	.055	-.24815	.12880
	Equal variances not assumed			-1.962	173.800	.051	-.24815	.12645
LR	Equal variances assumed	1.059	.305	-1.430	209	.154	-.12665	.08854
	Equal variances not assumed			-1.377	145.201	.171	-.12665	.09199

Table 5-4 lists the age versus constructs results and lists the sum of squares, DF, Mean Square, Frequency, and Significance. Results for mean and standard deviation in respect of research constructs, confirm that there are no significant differences for age, with the exception of LR.

Table 5-4: Age versus Constructs.

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
PE	Between Groups	5.944	4	1.486	3.889	.005
	Within Groups	78.710	206	.382		
	Total	84.654	210			
EE	Between Groups	25.123	4	6.281	11.114	.000
	Within Groups	116.416	206	.565		
	Total	141.539	210			
FC	Between Groups	27.577	4	6.894	13.739	.000
	Within Groups	103.374	206	.502		
	Total	130.952	210			
SI	Between Groups	23.363	4	5.841	12.205	.000
	Within Groups	98.581	206	.479		
	Total	121.944	210			
BI	Between Groups	15.581	4	3.895	11.430	.000
	Within Groups	70.203	206	.341		
	Total	85.783	210			
AU	Between Groups	9.837	4	2.459	5.267	.000
	Within Groups	96.182	206	.467		
	Total	106.019	210			
SS	Between Groups	17.691	4	4.423	9.126	.000
	Within Groups	99.834	206	.485		
	Total	117.525	210			
AP	Between Groups	55.466	4	13.866	18.785	.000
	Within Groups	152.060	206	.738		
	Total	207.526	210			
TI	Between Groups	78.593	4	19.648	17.946	.000
	Within Groups	225.539	206	1.095		
	Total	304.132	210			
RF	Between Groups	8.712	4	2.178	6.930	.000
	Within Groups	64.743	206	.314		
	Total	73.454	210			
IA	Between Groups	7.197	4	1.799	5.665	.000
	Within Groups	65.428	206	.318		
	Total	72.625	210			
EU	Between Groups	6.335	4	1.584	3.854	.005

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
	Within Groups	84.650	206	.411		
	Total	90.985	210			
MI	Between Groups	51.189	4	12.797	11.200	.000
	Within Groups	235.384	206	1.143		
	Total	286.573	210			
EM	Between Groups	72.044	4	18.011	16.779	.000
	Within Groups	221.128	206	1.073		
	Total	293.171	210			
SE	Between Groups	47.481	4	11.870	19.267	.000
	Within Groups	126.914	206	.616		
	Total	174.395	210			
LR	Between Groups	5.089	4	1.272	3.418	.010
	Within Groups	76.685	206	.372		
	Total	81.775	210			

Table 5-5 compares the constructs against work experience. The mean and standard deviations for research constructs, indicates significant differences between research constructs and work experience.

Table 5-5: Work Experience versus Constructs.

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
PE	Between Groups	3.901	2	1.950	5.023	.007
	Within Groups	80.753	208	.388		
	Total	84.654	210			
EE	Between Groups	12.414	2	6.207	9.999	.000
	Within Groups	129.124	208	.621		
	Total	141.539	210			
FC	Between Groups	14.567	2	7.284	13.017	.000
	Within Groups	116.385	208	.560		
	Total	130.952	210			
SI	Between Groups	16.070	2	8.035	15.786	.000
	Within Groups	105.873	208	.509		
	Total	121.944	210			
BI	Between Groups	11.491	2	5.746	16.087	.000
	Within Groups	74.292	208	.357		
	Total	85.783	210			
AU	Between Groups	6.432	2	3.216	6.717	.001
	Within Groups	99.587	208	.479		
	Total	106.019	210			
SS	Between Groups	11.912	2	5.956	11.730	.000
	Within Groups	105.613	208	.508		
	Total	117.525	210			
AP	Between Groups	34.214	2	17.107	20.531	.000

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
	Within Groups	173.312	208	.833		
	Total	207.526	210			
TI	Between Groups	39.492	2	19.746	15.520	.000
	Within Groups	264.640	208	1.272		
	Total	304.132	210			
RF	Between Groups	7.127	2	3.563	11.175	.000
	Within Groups	66.327	208	.319		
	Total	73.454	210			
IA	Between Groups	5.466	2	2.733	8.465	.000
	Within Groups	67.158	208	.323		
	Total	72.625	210			
EU	Between Groups	7.658	2	3.829	9.558	.000
	Within Groups	83.327	208	.401		
	Total	90.985	210			
MI	Between Groups	36.477	2	18.238	15.168	.000
	Within Groups	250.096	208	1.202		
	Total	286.573	210			
EM	Between Groups	47.374	2	23.687	20.045	.000
	Within Groups	245.797	208	1.182		
	Total	293.171	210			
SE	Between Groups	24.422	2	12.211	16.936	.000
	Within Groups	149.973	208	.721		
	Total	174.395	210			
LR	Between Groups	3.396	2	1.698	4.506	.012
	Within Groups	78.378	208	.377		
	Total	81.775	210			

Table 5-6 similarly shows work experience compared against research constructs. The results for mean and standard deviations for research constructs, clearly indicates significant differences, with the exception of LR.

Table 5-6: Work Experience versus Constructs.

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
PE	Between Groups	12.843	20	.642	1.699	.036
	Within Groups	71.811	190	.378		
	Total	84.654	210			
EE	Between Groups	22.694	20	1.135	1.814	.022
	Within Groups	118.845	190	.626		
	Total	141.539	210			
FC	Between Groups	29.159	20	1.458	2.721	.000
	Within Groups	101.792	190	.536		
	Total	130.952	210			
SI	Between Groups	19.797	20	.990	1.841	.019
	Within Groups	102.146	190	.538		
	Total	121.944	210			
BI	Between Groups	14.781	20	.739	1.978	.010
	Within Groups	71.002	190	.374		
	Total	85.783	210			
AU	Between Groups	20.525	20	1.026	2.281	.002
	Within Groups	85.494	190	.450		

ANOVA						
		Sum of Squares	DF	Mean Square	Frequency	Significance
	Total	106.019	210			
SS	Between Groups	19.799	20	.990	1.925	.013
	Within Groups	97.726	190	.514		
	Total	117.525	210			
AP	Between Groups	46.786	20	2.339	2.765	.000
	Within Groups	160.740	190	.846		
	Total	207.526	210			
TI	Between Groups	54.895	20	2.745	2.092	.006
	Within Groups	249.236	190	1.312		
	Total	304.132	210			
RF	Between Groups	8.298	20	.415	1.210	.250
	Within Groups	65.157	190	.343		
	Total	73.454	210			
IA	Between Groups	15.043	20	.752	2.482	.001
	Within Groups	57.581	190	.303		
	Total	72.625	210			
EU	Between Groups	17.530	20	.876	2.267	.002
	Within Groups	73.455	190	.387		
	Total	90.985	210			
MI	Between Groups	57.260	20	2.863	2.372	.001
	Within Groups	229.313	190	1.207		
	Total	286.573	210			
EM	Between Groups	50.873	20	2.544	1.995	.009
	Within Groups	242.298	190	1.275		
	Total	293.171	210			
SE	Between Groups	30.232	20	1.512	1.992	.009
	Within Groups	144.163	190	.759		
	Total	174.395	210			
LR	Between Groups	5.304	20	.265	.659	**.862**
	Within Groups	76.470	190	.402		
	Total	81.775	210			

The study examined how the level of experience on the effective use of HRIS compared with respect to acceptance and use variables. It presents the participants level of experience in both acceptance and use and the influence of factors from representation theory. The study displayed the impact of the level of experience on individuals' use and effective use of HRIS.

5.3.4 Measurement Model

SPLS is employed to evaluate this research model. SPLS (Hair *et al.,* 2011) evaluates the dimension and structural model in this research study. Psychometric characteristics of the measurement model, and approximations of the structural model are assessed utilising the ANOVA statistical package.

Reliability, internal consistency convergent validity, indicator reliability and discriminant validity, are collectively employed to evaluate factor loading and reliability in the measurement model. The following subsections documents findings of the analysis undertaken, to determine the validity of the measurement model, as part of this research study.

5.5.16.1. Internal Consistency Reliability

In instances where Consistency Reliability (CR) for individual decision variables exceed the threshold value of 0.7, then the measurement model for reasonable internal consistency reliability (CR) is met. Table 5-7 to this extent, displays the CR for each decision variable included in this study. The results show that CR values have ranged between 0.733 and 0.967. These results all exceed the threshold of 0.7. The results therefore confirms items employed to represent decision variables, have all satisfied internal composite reliability.

Table 5-7: Descriptive and Reliability Statistics.

Construct	Item	Mean	Standard Deviation	T-Statistics
AP CR=0.837	AP_1 <- AP	0.78	0.028	27.748
	AP_2 <- AP	0.788	0.030	26.053
	AP_3 <- AP	0.808	0.032	25.462
AU CR=0.878	AU_1 <- AU	0.868	0.031	27.837
	AU_2 <- AU	0.669	0.038	17.482
	AU_3 <- AU	0.837	0.033	25.132
	AU_4 <- AU	0.725	0.037	19.794
	AU_5 <- AU	0.713	0.040	18.04
BI CR=0.733	BI_1 <- BI	0.628	0.052	12.18
	BI_2 <- BI	0.616	0.054	11.364
	BI_3 <- BI	0.800	0.038	21.064
EE CR=0.919	EE_2 <- EE	0.681	0.065	10.579
	EE_3 <- EE	1.045	0.036	28.966
	EE_4 <- EE	0.826	0.045	18.49
	EE_5 <- EE	0.867	0.050	17.368
EM CR=0.901	EM_1 <- EM	0.949	0.019	48.889
	EM_2 <- EM	0.840	0.028	30.444
	EM_3 <- EM	0.789	0.035	22.835

Construct	Item	Mean	Standard Deviation	T-Statistics
	EM_4 <- EM	0.739	0.035	21.328
EU CR=0.739	EU_2 <- EU	-0.594	0.081	7.408
	EU_3 <- EU	-0.993	0.117	8.332
FC CR=0.868	FC_1 <- FC	0.676	0.034	19.693
	FC_2 <- FC	0.758	0.030	25.18
	FC_3 <- FC	0.838	0.024	34.302
	FC_5 <- FC	0.897	0.019	47.539
IA CR=0.940	IA_1 <- IA	0.950	0.039	24.236
	IA_2 <- IA	0.403	0.065	6.136
	IA_3 <- IA	0.911	0.035	25.895
IM CR=0.851	IM_3 <- IM	0.961	0.017	57.105
	IM_4 <- IM	0.885	0.021	41.178
LR CR=0.823	LR_1 <- LR	0.964	0.048	20.08
	LR_2 <- LR	0.401	0.108	3.71
	LR_3 <- LR	0.968	0.043	22.475
IM CR=0.838	MI_1 <- IM	0.924	0.019	49.407
	MI_2 <- IM	0.799	0.022	35.989
	RF_1 <- RF	0.772	0.039	19.654
RF CR=0.892	RF_2 <- RF	0.524	0.048	10.971
	RF_3 <- RF	0.895	0.029	30.551
	RF_4 <- RF	0.718	0.039	18.616
RF CR=0.92	SE_2 <- SE	0.755	0.029	26.446
	SE_3 <- SE	0.768	0.031	25.059
	SE_4 <- SE	0.855	0.030	28.526
SI CR 0.848	SI_3 <- SI	0.81	0.029	27.54
	SI_4 <- SI	0.853	0.021	41.154
	SI_5 <- SI	0.909	0.018	51.831
SS CR 0.848	SS_1 <- SS	0.850	0.028	30.288
	SS_2 <- SS	0.664	0.035	19.012
	SS_3 <- SS	0.903	0.029	30.83
TI 0.967	TI_1 <- TI	0.990	0.015	67.511
	TI_2 <- TI	0.916	0.017	53.776
	TI_3 <- TI	0.949	0.019	51.278

5.5.16.2. Reliability Indicator

Indicator reliability of the measurement model is measured by examining the items' loadings. A measurement model is said to have satisfactory indicator reliability when individual item's loading is at least 0.7 and is substantial at least at the level of 0.05.

Grounded on the investigation, all items in the measurement model exhibited loadings exceeding 0.7; ranging from a lower bound of 0.725 to an upper bound of 0.944.

Items show significance at a level of **0.001**. Table 5-7 lists descriptive and reliability statistics for the respective research constructs. Constructs are compared with respect to items, mean, standard deviation, and T-statistics. The results illustrate loading for individual items and its T-statistic values for respective decision variables. All items employed have confirmed acceptable internal consistency reliability for the following indicators: EE1, EU1, FC4, IM1, IM2, SE1, IM2, S1 and S2.

5.5.16.3. Convergent Validity

Convergent validity in the research model is evaluated by analysing the Average Variance Extracted (AVE). A satisfactory convergence validity is obtained in all instances where the results meet or exceed 0.5. Table 5-8 lists the AVE for respective constructs. The results confirm that all constructs have an AVE ranging between 0.651 and 0.937. Thus all constructs have an acceptable convergent validity.

Table 5-8 AVE Value (Source: Author).

Constructs	Average Variance Extracted (AVE)
AP	0.754
AU	0.672
BI	0.651
EE	0.806
EM	0.771
EU	0.783
FC	0.718
IA	0.736
IM	0.848
LR	0.758
RF	0.654
SE	0.755
SI	0.822
SS	0.769
TI	0.937

5.5.16.4. Discriminate Validity

This research study applies both Fornell and Larcker, (2006) criterion and cross loading to determine the discriminate validity of the measurement model. Chapter 4 emphasises, that a measurement model has discriminant validity, where AVE exceeds the correlations between the measure and all other measures. And, where the indicators' loadings are higher, against respective decision variables, as equated to other decision variables.

The AVE value for each decision variable is produced by applying an SPLS algorithm function. This regulates the first valuation of the measurement model's discriminant validity. The square roots of AVE are then physically evaluated.

Table 5-9 lists the inter-correlation matrix to measure discriminate validity. All AVE values obtained in the matrix exceeded the off diagonal elements, in corresponding columns and rows. The bolded values illustrate the square roots for AVE, a un-bolded values the inter-correlation values, which lie between decision variables. Off-diagonal elements are lower than square roots of AVE (i.e. bolded on the diagonal). The results confirm that Fornell and Larker's conditions were achieved.

Table 5-9 Inter-Correlation Matrix: Discriminant Validity

	AP	AU	BI	EE	EM	EU	FC	IA	IM	LR	RF	SE	SI	SS	TI
AP	**0.869**														
AU	0.72	**0.82**													
BI	0.709	0.662	**0.806**												
EE	0.498	0.391	0.625	**0.898**											
EM	0.785	0.599	0.72	0.458	**0.878**										
EU	0.24	0.451	0.358	0.417	0.044	**0.885**									
FC	0.777	0.74	0.682	0.379	0.731	0.325	**0.848**								
IA	0.604	0.618	0.608	0.352	0.55	0.417	0.661	**0.858**							
IM	0.742	0.667	0.498	0.195	0.678	0.144	0.769	0.562	**0.921**						
LR	0.363	0.517	0.496	0.381	0.265	0.569	0.472	0.511	0.331	**0.871**					
RF	0.706	0.745	0.636	0.375	0.516	0.47	0.674	0.615	0.658	0.573	**0.809**				
SE	0.777	0.602	0.627	0.332	0.787	0.018	0.798	0.553	0.775	0.312	0.604	**0.869**			
SI	0.782	0.673	0.676	0.32	0.787	0.131	0.844	0.61	0.762	0.364	0.629	0.833	**0.907**		
SS	0.762	0.666	0.558	0.322	0.695	0.162	0.688	0.516	0.745	0.375	0.69	0.687	0.729	**0.877**	
TI	0.779	0.559	0.676	0.543	0.824	0.102	0.714	0.502	0.63	0.303	0.473	0.77	0.738	0.608	**0.968**

* Square root of the AVE on the diagonal (bold) *

Table 5-10 lists cross loading outputs obtained after having applied the SPLS algorithm occupation. This is a second means to assessing discriminant validity scrutinising loadings, relevant to decision variable correlations. Measurement items loaded higher than its future latent variables, compared favourably to other constructs. The loading of each block was also higher than other blocks, for corresponding columns and rows.

Loading, invariably segregates individual decision variables, as supported and theorised in the *framework model*. Cross-loading outputs confirmed the second valuation of the measurement model's discriminant validity are acceptable. The study confirms that the measurement model has recognised their discriminant validity. Reliability and validity assessments further confirm that the measurement model was acceptable. Thus the measurement model for this study was valid and fit for use, to estimate parameters of the structural model.

Table 5-10 The Cross-loading Output Using SPLS

	AP	AU	BI	EE	EM	EU	FC	IA	IM	LR	RF	SE	SI	SS	TI
AP_1	0.852	0.657	0.547	0.24	0.579	0.173	0.677	0.508	0.719	0.348	0.724	0.677	0.689	0.747	0.558
AP_2	0.903	0.613	0.57	0.429	0.703	0.184	0.66	0.508	0.697	0.24	0.592	0.698	0.658	0.662	0.698
AP_3	0.851	0.6	0.73	0.639	0.768	0.268	0.683	0.557	0.512	0.351	0.513	0.648	0.686	0.567	0.781
AU_1	0.622	0.781	0.589	0.326	0.56	0.313	0.684	0.51	0.659	0.469	0.682	0.635	0.681	0.663	0.504
AU_2	0.496	0.798	0.471	0.244	0.427	0.314	0.529	0.51	0.502	0.36	0.531	0.371	0.49	0.505	0.336
AU_3	0.666	0.882	0.626	0.382	0.612	0.344	0.659	0.554	0.564	0.383	0.599	0.547	0.597	0.548	0.575
AU_4	0.588	0.842	0.478	0.29	0.41	0.467	0.586	0.466	0.501	0.424	0.629	0.423	0.493	0.506	0.402
AU_5	0.549	0.793	0.518	0.344	0.397	0.432	0.539	0.482	0.472	0.478	0.594	0.433	0.449	0.474	0.43
BI_1	0.487	0.468	0.841	0.484	0.548	0.221	0.475	0.48	0.305	0.411	0.489	0.479	0.482	0.397	0.503
BI_2	0.522	0.401	0.782	0.659	0.621	0.233	0.451	0.407	0.269	0.317	0.336	0.419	0.457	0.31	0.644
BI_3	0.674	0.69	0.794	0.391	0.569	0.385	0.687	0.562	0.583	0.455	0.67	0.594	0.661	0.601	0.495
EE_2	0.315	0.306	0.483	0.824	0.345	0.382	0.271	0.186	0.07	0.259	0.273	0.189	0.18	0.255	0.391
EE_3	0.545	0.423	0.623	0.938	0.51	0.38	0.455	0.378	0.284	0.36	0.414	0.409	0.403	0.374	0.59
EE_4	0.433	0.339	0.558	0.921	0.36	0.417	0.288	0.341	0.146	0.37	0.35	0.258	0.241	0.244	0.426
EE_5	0.47	0.326	0.568	0.904	0.415	0.325	0.33	0.339	0.174	0.368	0.295	0.31	0.299	0.272	0.522
EM_1	0.749	0.606	0.587	0.299	0.854	0.037	0.799	0.557	0.821	0.267	0.572	0.838	0.825	0.721	0.768
EM_2	0.686	0.515	0.565	0.323	0.893	-0.006	0.674	0.467	0.693	0.247	0.407	0.748	0.71	0.629	0.741
EM_3	0.665	0.484	0.701	0.511	0.906	0.07	0.593	0.451	0.442	0.236	0.406	0.642	0.635	0.546	0.742
EM_4	0.654	0.498	0.668	0.468	0.859	0.05	0.504	0.455	0.432	0.18	0.421	0.541	0.593	0.547	0.641
EU_2	0.083	0.315	0.203	0.306	-0.108	0.821	0.173	0.256	0.02	0.497	0.323	-0.104	-0.005	0.042	-0.06
EU_3	0.292	0.458	0.39	0.415	0.125	0.944	0.361	0.443	0.193	0.52	0.48	0.085	0.188	0.206	0.179
FC_1	0.518	0.6	0.555	0.422	0.469	0.517	0.775	0.512	0.459	0.558	0.568	0.437	0.496	0.47	0.487
FC_2	0.662	0.533	0.426	0.128	0.608	0.079	0.777	0.485	0.75	0.25	0.526	0.773	0.75	0.647	0.583
FC_3	0.669	0.693	0.637	0.33	0.663	0.269	0.903	0.623	0.701	0.4	0.577	0.72	0.76	0.595	0.616
FC_5	0.782	0.666	0.656	0.363	0.73	0.213	0.924	0.605	0.721	0.374	0.613	0.793	0.854	0.642	0.726

	AP	AU	BI	EE	EM	EU	FC	IA	IM	LR	RF	SE	SI	SS	TI
IA_1	0.637	0.662	0.617	0.454	0.573	0.51	0.685	0.882	0.535	0.459	0.599	0.528	0.591	0.469	0.561
IA_2	0.216	0.282	0.268	0.025	0.188	0.196	0.303	0.75	0.281	0.318	0.327	0.22	0.286	0.266	0.067
IA_3	0.593	0.554	0.591	0.314	0.553	0.297	0.62	0.932	0.567	0.506	0.593	0.593	0.617	0.541	0.527
MI_1	0.707	0.611	0.48	0.189	0.631	0.154	0.745	0.539	0.929	0.31	0.632	0.737	0.731	0.705	0.595
MI_2	0.63	0.575	0.4	0.128	0.537	0.146	0.623	0.478	0.898	0.284	0.597	0.614	0.61	0.622	0.469
IM_3	0.744	0.645	0.514	0.233	0.706	0.097	0.739	0.525	0.929	0.307	0.627	0.779	0.766	0.737	0.637
IM_4	0.642	0.622	0.432	0.159	0.61	0.138	0.716	0.525	0.926	0.316	0.564	0.712	0.688	0.672	0.606
LR_1	0.402	0.502	0.484	0.397	0.249	0.547	0.459	0.463	0.333	0.932	0.595	0.31	0.364	0.374	0.298
LR_2	0.033	0.265	0.222	0.144	-0.011	0.45	0.201	0.283	0.073	0.725	0.283	0.008	0.105	0.095	-0.026
LR_3	0.362	0.505	0.493	0.363	0.32	0.504	0.474	0.524	0.346	0.939	0.524	0.353	0.374	0.392	0.358
RF_1	0.616	0.618	0.575	0.403	0.404	0.432	0.577	0.523	0.5	0.517	0.823	0.5	0.506	0.587	0.408
RF_2	0.393	0.451	0.362	0.215	0.244	0.352	0.357	0.408	0.42	0.405	0.743	0.333	0.336	0.43	0.142
RF_3	0.72	0.687	0.604	0.303	0.615	0.307	0.684	0.583	0.684	0.441	0.833	0.649	0.687	0.682	0.589
RF_4	0.54	0.641	0.498	0.271	0.398	0.418	0.545	0.469	0.524	0.479	0.831	0.464	0.497	0.526	0.37
SE_2	0.619	0.509	0.416	0.101	0.637	-0.061	0.685	0.456	0.746	0.166	0.511	0.882	0.744	0.614	0.594
SE_3	0.652	0.515	0.566	0.312	0.576	0.098	0.671	0.496	0.636	0.372	0.587	0.874	0.678	0.564	0.606
SE_4	0.75	0.542	0.646	0.44	0.83	0.009	0.722	0.488	0.64	0.273	0.477	0.851	0.747	0.612	0.798
SI_3	0.645	0.622	0.653	0.275	0.64	0.178	0.734	0.541	0.608	0.401	0.551	0.692	0.894	0.613	0.578
SI_4	0.693	0.584	0.532	0.194	0.727	0.074	0.778	0.551	0.748	0.286	0.582	0.783	0.915	0.689	0.64
SI_5	0.788	0.619	0.636	0.384	0.774	0.094	0.785	0.566	0.727	0.292	0.579	0.795	0.91	0.684	0.785
SS_1	0.649	0.57	0.598	0.439	0.689	0.179	0.622	0.507	0.581	0.375	0.559	0.611	0.634	0.833	0.656
SS_2	0.593	0.539	0.329	0.139	0.432	0.093	0.497	0.315	0.62	0.257	0.592	0.502	0.536	0.855	0.325
SS_3	0.749	0.637	0.519	0.254	0.683	0.149	0.675	0.514	0.75	0.346	0.661	0.679	0.73	0.939	0.59
TI_1	0.778	0.578	0.672	0.525	0.819	0.109	0.716	0.497	0.627	0.328	0.485	0.781	0.75	0.623	0.974
TI_2	0.724	0.516	0.646	0.548	0.768	0.134	0.67	0.464	0.584	0.28	0.443	0.696	0.666	0.546	0.96
TI_3	0.758	0.523	0.644	0.502	0.801	0.048	0.684	0.496	0.616	0.265	0.44	0.754	0.72	0.59	0.97

5.3.5Structural Equation Modeling

These subsequent sections discuss assessments measuring the validity of the structural equation modeling applied in this study. The coefficient of determination (R^2) and path coefficients are employed to determine validity of the structural model. The study further evaluates mediation relationships outlined in the research model. The guidelines developed by Baron and Kenny, (2006) was applied to verify mediation relationships. Sobel's Test (Z) was subsequently applied to determine the significance of the mediating relationships.

5.5.16.5. Coefficient of Determination

R^2 values represents the overall variance in dependent variables, as explained by the independent decision variable. The larger the R2 value the greater the prognostic aptitude for the structural model. SPLS algorithm task is employed to obtain the R^2 values, while SPLS bootstrapping function is used to produce T-statistics values. In this research study, bootstrapping produced 500 extrapolated from 220 cases.

Figure 5-1 depicts the structural model. The results confirms the following constructs: SI, IM, EM, FC and EE are able to explain 68.4% of the variance in BI. Furthermore, BI, IM, EM and SE explain 15.3% of the variance in AU and AP, while SS explains 58.7% of the variance in LR. Similarly, AU explains 44.2% of the variance in SS, LR explains 32.6% of the variance in RF, LR explains 9.0% of the variance in TI and LR explains 25.9% of the variance in IA. Lastly, IA values explain 17.4% of the variance in EU.

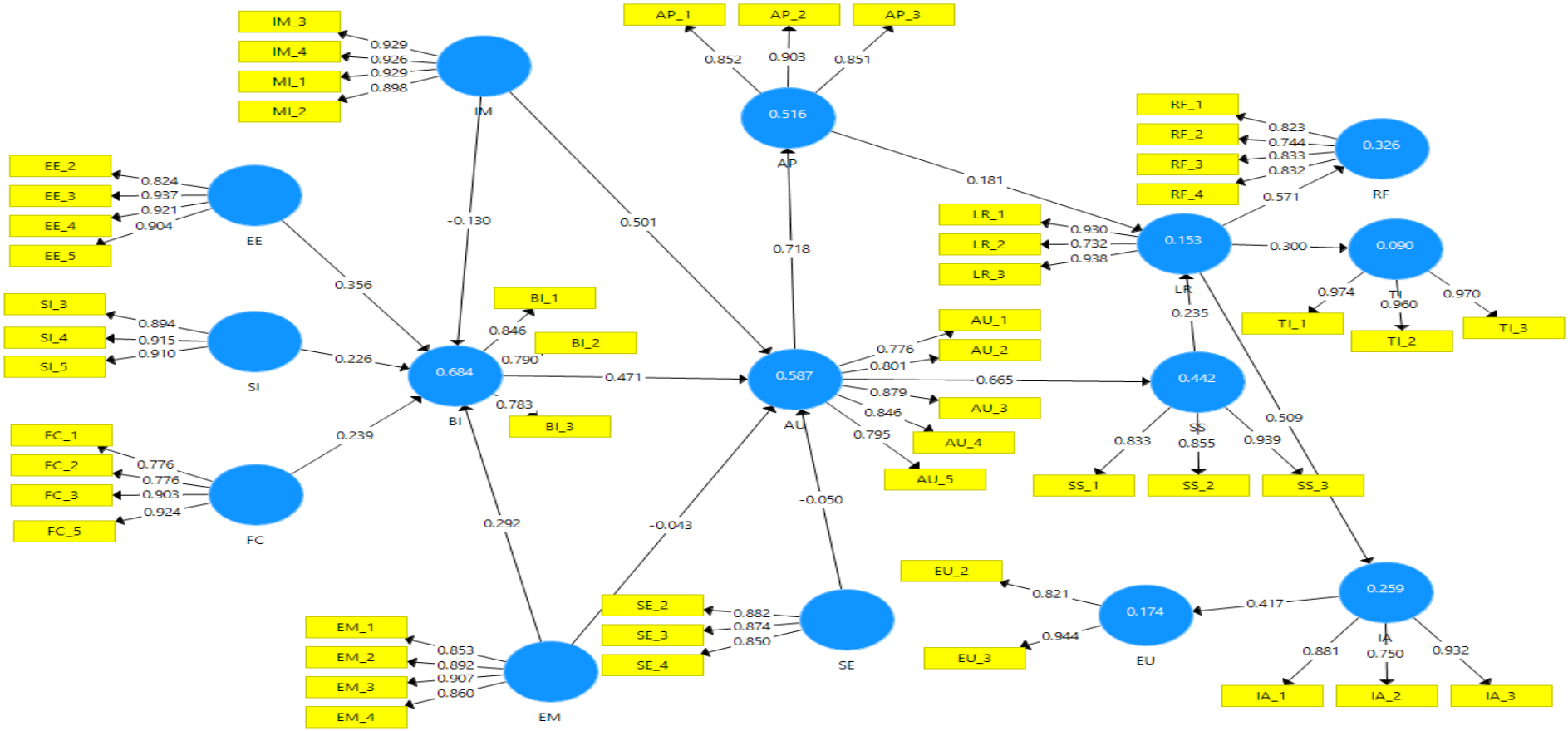

Figure 5-1 Results of Structural equation Modeling

5.5.16.6. Path Coefficients

Each hypothesis in the structural model comprised a path connecting two latent variables. This allowed the researcher accept or reject each hypothesis, while understanding the strength of associated dependent and independent variables.

Results obtained from the SPLS algorithm explained relationships between dependent and independent variables analysed. However, to test the significance level, T-statistic for all paths were produced by employing SPLS bootstrapping function. T-statistic results confirmed that the significance level of each relationship was strong-minded. Table 5-11 lists the path coefficients, observed t-statistics, and significance level for individual research hypothesised paths. Using the results from the path assessment, the acceptance or rejection of the proposed hypotheses is determined.

Table 5-11 Path Coefficients, Observed T-Statistics, Significant, Hypothesised Paths

Dependent Constructs	Independent Constructs	Path Coefficient (β)	T-Statistic	Significance
AP	<- AU	0.718	22.302	0.00
SS	<- AU	0.665	15.148	0.00
AU	<- BI	0.471	0.012	0.991
	<- EM	-0.043	0.005	0.996
	<- IM	0.501	0.065	0.948
	<- SE	-0.050	0.023	0.982
BI	<- EE	0.356	0.09	0.928
	<- FC	0.239	0.017	0.986
	<- EM	0.292	0.043	0.966
	<- IM	-0.130	0.071	0.944
	<- SI	0.226	0.002	0.999
EU	<- IA	0.417	6.427	0.000
IA	<- LR	0.509	9.305	0.000
RF	<- LR	0.571	9.79	0.000
TI	<- LR	0.300	5.072	0.000
LR	<- AP	0.181	0.47	0.638
	<- SS	0.235	0.82	0.412

5.4 HYPOTHESIS TESTING

Path coefficients between two latent variables were assessed in order to validate the project hypotheses and structural model. Past research studies have confirmed that path coefficient values had to at least amount to 0.1 to establish a certain level of impact in the model. Similarly, T-values had to exceed 1.96 (Hair *et al.*, 2011; Wetzels *et al.*, 2009).

Table 5-12 lists the results for hypotheses having employed the Test Model. The results indicate that all hypotheses H1 to H6 were rejected.

Table 5-12 Hypothesis Test for the Model

Hypotheses Statements		Results
H1	Performance expectancy influences individuals' behaviour to use HRIS.	Not Supported
H2	Social influence influences Individuals' behavioural intention to use HRIS.	Not Supported
H3	Facilitating condition influences individuals' behavioural intention to use HRIS**.**	Not Supported
H4	Individuals' behavioural intention influences acceptance and AU.	Not Supported
H5	Self-efficacy affects individuals' acceptance and AU.	Not Supported
H6	Effort expectancy influences individuals' behavioural intention to use HRIS.	Not Supported

Table 5-13 lists the results obtained for having tested hypotheses employing Self SDT. The results show that hypotheses H7 to H10 were all rejected.

Table 5-13 List of Hypotheses from SDT Applied.

Hypotheses statements		Results
H7	Intrinsic Motivation positively influences behavioural intentions to use HRIS.	Not Supported
H8	Intrinsic Motivation positively influences the AU.	Not Supported
H9	Extrinsic Motivation positively influences behavioural intentions to use Human Resource Information System	Not Supported
H10	Extrinsic Motivation positively influences the AU	Not Supported

Table 5-14 employs the results for hypotheses testing having employed Representation theory. It lists hypotheses H11 to H18. The results show that hypotheses H11 and H12 were rejected, while H13 to H18 were accepted (supported).

Table 5-14 A brief list of hypotheses from Representation Theory Applied

Hypotheses statements		Results
H11	Adapting physical structure (AP) influences individuals' learning to learn representation (LR).	Not Supported
H12	Adapting surface structure (SS) influences individuals' learning to learn representation (LR).	Not Supported
H13	Learning to learn representation (LR) influences individuals' informed action (IA).	Supported
H14	Learning to learn representation (LR) influences individuals' representation fidelity (RF).	Supported
H15	Learning to learn representation (LR) influences individuals' transparent interaction (TI).	Supported
H16	Informed action (IA) positively influences individuals' effective use of HRIS (EU).	Supported
H17	Adapting surface structure positively influences the AU.	Supported
H18	The relationship between AU is mediated positively by IM	Partially Supported

5.4.1 Summary of Hypothesis Testing

The results analysis indicate that BI is not directly influenced by SI ($\beta = 0.226$, $t = 0.002$ $p > 0.05$). Similarly, BI is not directly influenced by FC ($\beta = 0.239$, $t = 0.017$, $p > 0.05$). BI also not directly influenced by EE ($\beta = 0.356$, $t = 0.090$, $p> 0.05$). On the other hand, AU is not directly influenced by BI ($\beta = 0.471$, $t = 0.012$, $p > 0.05$). Furthermore, AU is not directly influenced by SE ($\beta = -0.050$, $t = 0{,}023$, $p > 0.05$). As a result, hypotheses H2, H3, H4, H5 and hypothesis H6 are **rejected** (not supported).

The results indicate that BI is not directly influenced by IM ($\beta = -0.130$, $t = 0.071$, $p > 0.05$), BI is similarly not directly influenced by EM ($\beta = 0.292$, $t = 0.043$, $p > 0.05$). In addition, AU is not directly influenced by IM ($\beta = 0.501$, $t = 0.056$, $p > 0.05$), and similarly AU is not directly influenced by EM ($\beta = -0.043$, $t = 0.005$, $p > 0.05$). Consequently, hypotheses H7, H8, H9 and H10 are **rejected**.

The results show that LR is not directly influenced by AP (β = 0.181, t = 0.047, p > 0.05). Similarly, LR is not directly influenced by SS (β = 0.235, t = 0.820, p > 0.05). SS is additionally not directly influenced by AU (β = 0.665, t = 15.148, p < 0.05), while RF is also not directly influenced LR (β = 0.571, t = 9.790, p < 0.05). TI is not directly influenced by LR (β = 0.300, t = 5.072, p < 0.05), while IA is similarly not directly influenced by LR (β = 0.509, t = 9.305, p < 0.05). EU is furthermore not directly influenced by IA (β = 0.417, t = 6.427, p < 0.05). Therefore the following hypotheses are accepted: H11, H12, H13, H14, H15, H16 and hypothesis H17.

5.4.1 Mediating Analysis

Henseler *et al.,* (2009), assessing the direct and indirect relationships between exogenous and endogenous latent variables is another important evaluation of a structural model. This direct and indirect relationship can be examined by showing mediating or moderating analyses.

This section only measured the significance of the mediating relationships. This is cantered on the theoretical reasoning that suggests IM as key mediating factors that influenced long-term relationships. Figures 5-2 and Figure 5-3 display the result of the analysis showed to scrutinize the mediating effect of IM on AU. The analysis is ongoing by inspecting the influence of AU.

From the analysis, AU is influenced positively by BI (β=0.694, t= 4.195, see Figure 5-2. To test the mediating effect of IM, the mediating variable is introduced into the relationship between BI and AU (please refer to Figure 5-3). From the analysis, IM is identified to influence AU positively (β=0.421, t=5.248) and has been prejudiced positively by BI (β=0.523, t=4.139).

The introduction of the mediating variable reduces the coefficient value between BI and AU from 0.694 to 0.482. Based on Baron and Kenny's guidelines, this study accomplishes that identification IM has partially mediated the relationship between BI and AU. Further, based on analysis, it also shows that the introduction of IM as a mediator has increased

the R^2 value from 0.482 (or 48.2%) to 0.621 (or 62.1%). Therefore hypothesis H18 is accepted.

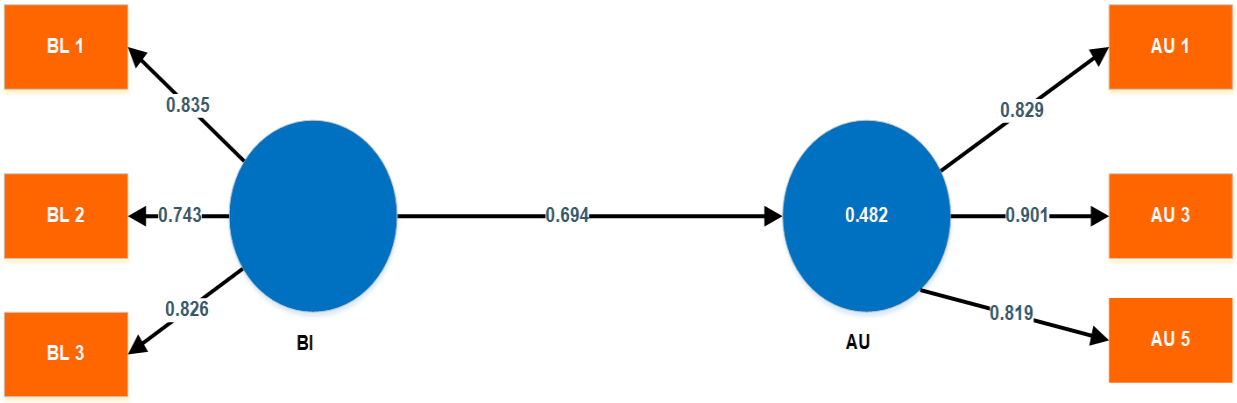

Figure 5-2: Sorbel's Test

Sobel's test is then used to test the implication of the mediating relationships hypothesised in this study. Table 5-15 displays the summary of the direct and indirect relationships based on the structural model. Grounded on the aforementioned table, the relationship between BI and AU is mediated significantly by IM. The Z value is greater than 1.96 explains IM (Z= 3.345, $p < 0.01$) as significant mediator. The strength of the relationship between IM (β=0.421) on AU, shows that decision variables have equal importance in affecting members' AU. Figure 5-3 illustrates the mediating effect.

Table 5-15 Path Coefficient

	Path	Path Coefficient	Standard Error	Type of Mediation	Z	Results
Path a	BI -> IM	0.523	0.065			The relationship between BI and AU is significantly mediated by IM (p< 0.001)
Path b	IM -> AU	0.421	0.099			
Path c	BI -> AU	0.694				
Path c'	BI -> IM-> AU	**0.482**		Partial	3.345	

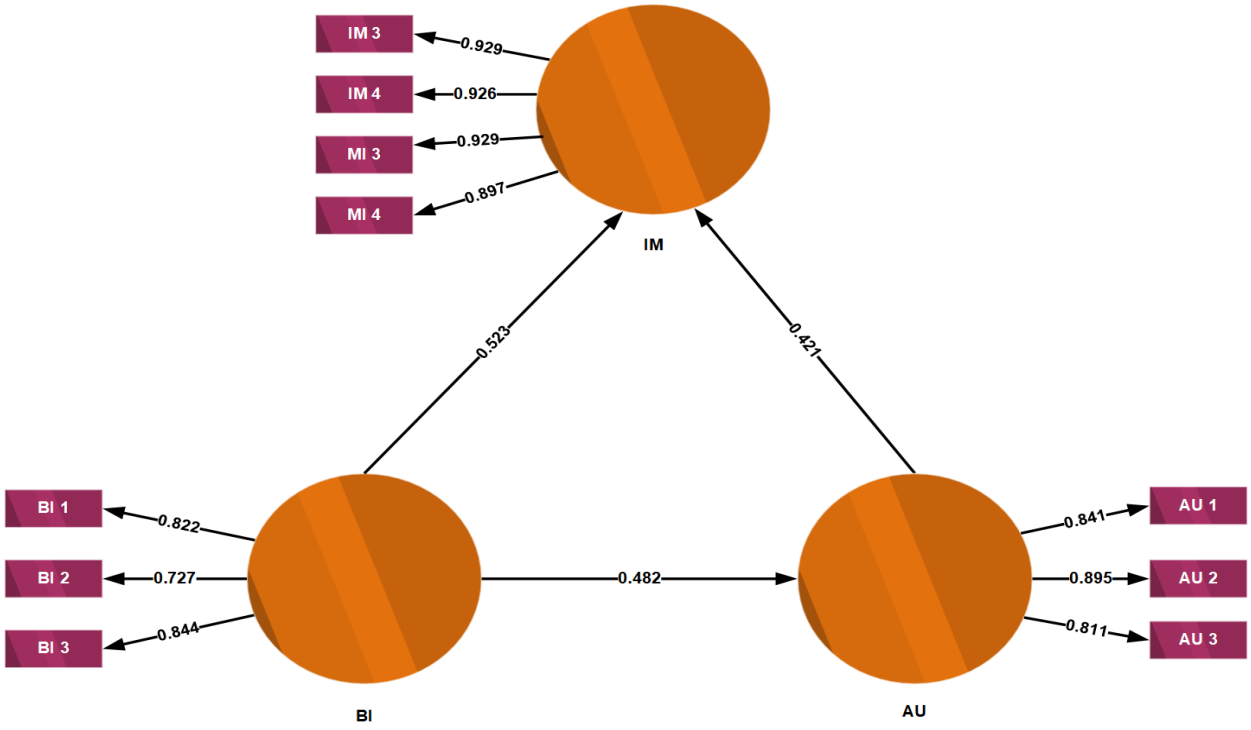

Figure 5-3 Sorbel's Mediating Test

5.5 SUMMARY OF THE CHAPTER

Influencing determinants - BI, AU, AP, EU, IA, SS, LR, TI and RF were investigated by employing SPLS. Various observations were derived from analysis stemming from the measurement and structural. Results obtained from the structural equation modeling confirms satisfactory reliability and validity measures. Results obtained for internal consistency, confirmed that all decision variables have composite reliability values in excess of 0.7.

Item loadings collectively exceeded 0.7, while achieving a significance of level of 0.001. These results fully supports indicator reliability. Furthermore, the measurement model demonstrated satisfactory convergent and discriminant validity.

AVE values exceeded 0.50. Variables loaded on respective latent variables and the square roots of AVE for individual constructs were greater than their inter-correlation. Validation of the structural model further derived satisfactory results. R^2 was significant

peaking at values of 68.4% for BI, 58.7% for AU, 51.6% for AP, 25.9% for IA, 44.2% for SS and 32.6% for RF.

This typically illustrates strong explanatory power. In addition, 13 out of 17 projected paths within the structural model were supported. Results obtained from the coefficient calculation confirmed that 13 proposed relationships had a β value greater than 0.1, and significance level of at least 0.01. The structural model also demonstrated significant mediation relationships. Results further indicated that constructs exhibited a partial mediatory effect on the relationship between BI and AU.

The following chapter presents the interpretation of these results. The chapter also presents the HRIS use model.

CHAPTER 6 RESULTS INTERPRETATION AND HRIS EFECTIVE USE MODEL

6.1 PRELUDE

The previous chapter analysed data and presented the results. The interprentation of these results is provided in this chapter .This chapter furthermore presents the derived model for HRIS use. Interpretation of the empirical results is done against the existing literature as reviewed in the earlier chapters.

Qualitative data collected is analysed to augment and give context to the interpreted quantitative results.The results and key findings are presented in this chapter. The factors influencing acceptance and effective use of HRIS are re-evaluated. In addition to this, key findings are documented of those factors which influences Behavioural Intention, Usage and Acceptance, Learning to Learn Representation, and Informed Action are analysed. Finally, Representation Fidelity, Transparent Interaction, Effective use of HRIS, Behavioural Intention and Intrinsic Motivation are interrogated.

6.2 KEY STUDY RESULTS AND INTERPRETATION

Various factors integrally influence the acceptance and effective use of HRIS. Consideration of factors influencing the acceptance and use of HRIS, as well as the effective use of HRIS in delivering services are documented. The purpose of the research investigation was to critically explore and explain these underlying factors. Interpretation of these results are presented in this chapter.

6.2.1 Demographic Data Analysis

The section presents the interpretation of demographics by discussing the distribution of respondents by SOA's areas, genders, experience, specialty/position, and qualification.

6.2.2 Distribution by Respondents of SOAs

The section further presents the demographic data analysis interpretation by discussing the distribution of respondents by SOA's areas, genders, experience, specialty/position, and qualification. Distribution of respondents by SOA's areas. The distribution of respondents by SOA''s areas are shown in Table 5-1: Demographic Distribution of Participants. The distribution was Eskom (0.58%), IDC (0.86%), Central Energy fund (0.86%).

The remainder of the population representation are SAFCOL (2.02%), Telkom (2.59%), Alexkor (3.17%), IDT (4.03%), SA Post Office (7.78%), DBSA (2.31%), SANEDI (33.11%), DENEL (1.15%), South African Express (4.61%), National Credit Regulator (8.36%), Mine Health of Safety Council (8.36%), SA Nuclear Corporation (2.31%), Transnet(2.88%), Alexkor (1.73%), SA Express(5.48%), and African Institute of South Africa (6.34%). Eskom is the highest in number of population represented.

6.2.3 Distribution by Participants Gender

Analyses of gender showed that the majority of the respondents are female (59.95%), while the minority of the respondents are male (40.05%).

6.2.4 Distribution by Participants Age

The age distribution is represented as follows: 18-30 (40.2%), 31-40 (40.3%), 41-50 (2.8%), and 51-60 and above (2.9%).

6.2.5 Distribution of Participants by Years of Working Experience

The years of working experience distribution are represented as follows: 1-5 (44.2%), 6-10 (41.0%), 11-15 (9.5%), 16-20 (2.5%), 21-25 (2.2%), and 26 and above (0.6%).

6.2.6 Distribution by Speciality Position

The highest representation in this demographical distribution is HR Officers, with 32.1% representation, followed by HR Managers, with 27.6) representation. HR administrator, with 9.0% representation; Finance / Admin Managers, with 6.4% representation; Project

Officers, with 21.7% representation. The distribution that defines the representation Administrative or support are represented as 3.1%.

6.2.7 Distribution of Participants by Qualification

With regard to the respondents who indicated their highest level of qualification in Table 5-1: Demographic Distribution of Participants., the majority of the respondents hold a bachelor's degree (52.1%), followed by those with a diploma (12.9%), then those who hold a certificate (11.7%), those with a master's degree (5.5%), and those with a PhD degree are the least represented with 1.2%.

6.3 FACTORS INFLUENCING ACCEPTANCE AND EFFECTIVE USE OF HRIS

6.3.1 Behavioural Intention

Research findings conclude that members' ***performance expectancy (PE)*** does not significantly influence ***behavioural intention (BI)*** when employing HRIS.

Performance expectancy is the degree to which technologies yield benefits to consumers when completing specific work related activities. Literature shows that BI's are higher where individuals experience higher satisfaction and trust in relation to technology. PE and EE had significant positive effects on behaviour and intent (BI). This is, however, inconsistent with studies conducted by (Venkatesh *et al*., 2003; Šumak & Šorgo, 2016; Hoque & Sorwar, 2017; Khalilzadeh *et al*., 2017; Šumak *et al.,* 2017) where the significance was less.

The results showed that ***social influence (SI)*** does not have a significant influence on the individuals' ***Behavioural and Intent (BI)*** to use HRIS ($\beta = 0.226$; $p > 0.05$).
Social Influence suggests that the degree to which individuals use technology, are driven by peer influence, opinions and perception of one's immediate surroundings. These studies are consistent with previous research. For example Gallivan (2012), reported that social influence was the most powerful antecedent of intention to use technology. Social influence within a technology context, refers to the extent which consumers believe it important for them to use technology (Lin & Huang, 2010).

The research found that ***facilitating condition (FC)*** does not have a significant influence on the individuals' ***behavioural intention (BI)*** to use HRIS (β = 0.239; p > 0.05). Facilitating condition can be defined as consumers' perceptions about the resources and support available to perform a given behaviour. These findings are inconsistent with those of a study conducted by (Venkatesh & Davis, 2000). The latter study confirmed that there is a direct correlation between facilitating condition and behavioural intention to use technology. Gallivan (2012) is convinced that adequate facilitating conditions are a prerequisite for ICT acceptance.

Results further noted that ***effort expectancy (EE)*** does not have a significant influence on the individuals' ***behavioural intention (BI)*** to use HRIS (β = 0.356; p > 0.05). These results contradict the findings of a study undertaken by (Hsu *et al.* 2007). Their study emphasised that there is a significant positive impact effort expectancy on users' behavioural intention to use technology.

Intrinsic Motivation (IM) has no significant influence on ***behavioural intention (BI)*** to use HRIS where (β = -0.130; p > 0.05). The results of this study, shows significant inconsistencies with those undertaken Chiu *et al.,* (2006). Their study found individuals experiencing enjoyment and satisfaction increases their use of technology. This construct evidently plays a huge role in determining technology acceptance.

Extrinsic Motivation (EM) does not have a significant influence towards ***behavioural intentions (BI)*** to use HRIS (β=0.292; p>0.05). The results of this study confirms that there is no significant between expected rewards and behaviour. These results concur with the findings of a study conducted by (Fishbein & Ajzen, 2006). Their study showed a person may or may not be motivated to comply with a given referent. Results of this study however contradicts those published by (Cho & Perry, 2012). Their study found motivation is an incredibly significant driver of attitude. Davis *et al.,* (2010); Deci and Ryan, (1980) contend that user's attitude is a pivotal factor in technology adoption. They maintain that attitude can be a powerful enabler or disabler for adopting new systems.

Actual usage and acceptance - the results indicate that participants' ***behavioural intention (BI)*** does not significantly influence the individual's ***acceptance and use*** (***AU)***

of HRIS for AU (β = 0.471; p > 0.05). The present study does not support the hypothesis. These study findings are therefore inconsistent with other studies (Davis *et al.,* 2010; Deci & Ryan, 2013). Their findings suggests that behavioural intention ultimately leads to actual use of systems.

Self-efficacy does not significantly influence ease of use in individuals' ***acceptance and use*** (β = -0.050; p > 0.05). SCT theory purports that individuals with high self-efficacy invariably behaves in a particular manner. This infers that individuals who have a high degree of self-confidence, are likely to competently execute IS tasks. Individuals who have low confidence levels, are less likely to perform IS tasks competently (Lin & Huang, 2010).

The results of this study indicate that there is a poor association between self –efficacy, acceptance and use of HRIS. The results of this study is incongruent with other studies published in the literature. Studies have reported that individuals having high levels of confidence are likely to perform computer-based tasks very effective. There is an expectation that their self-confidence will drive a behaviour which positively contributes to the success of the project.

Results obtained in this study is similarly inconsistent with studies published by among others Compeau & Higgins, (1995a) and (1995b). Their studies for example concluded that computer self-efficacy significantly influences personal outcomes expectations. Similarly, computer self-efficacy has a positive influence on performance, which has a concomitant positive influence on outcome expectations (Marakas, 2000).

Intrinsic Motivation (IM) does not significantly influence the ***acceptance and use*** (***AU)*** (β=0.501; p>0.05). The study refutes the hypothesis that individuals experience enjoyment and satisfaction from the use of technology. The study results contrasts those published by (Sánchez & Hueros, 2010; Teo, *et al.,* 2007; Venkatesh, 1999). These studies emphasises the importance of intrinsic motivation within the context of UTAUT, effort expectancy, which reflects the intrinsic motivation derived from using systems (Davis et al., 1992).

Many researchers have highlighted enjoyment and playfulness as intrinsic motivators (Fagan *et al.,* 2008; Lee *et al.,* 2005; Venkatesh & Davis, 2000). A study conducted by Heijden, (2004), the results confirmed that attitudes and effort expectancy, are both intrinsic motivators when examining behavioural intentions on technology usage.

More recent studies have shown, that extrinsic motivation is as important as intrinsic motivation in determining HRIS use and acceptance (Deci *et al.,* 1999). Earlier literature downplayed the importance of extrinsic motivation (Decharms, 1972). Consequently, gaining motivation from achieving a utilitarian outcome is as important as experiencing enjoyment from completing a task.

Extrinsic Motivation (EM) has no significant influence on ***acceptance and use*** (***AU)*** (β=-0.043; p>0.05). The results of this study has confirmed a positive correlation between extrinsic motivation and acceptance of technology. The results comply with those of former studies on extrinsic motivation (Teo *et al.,* 1999; Roca & Gagné, 2008). These studies highlight the importance of extrinsic factors in influencing learners and instructors to actively employ e-learning systems. Informants' perceptions about self-efficacy, system satisfaction, usefulness, and enjoyment have positive effects on the individual's intent to employ learning management systems efficiently and effectively.

6.3.2 Learning to Learn Participation

Adapting physical structure (AP) do not significantly influence individuals' ***learning to learn representation (LR)*** (β=0.181; p>0.05). This study confirmed that learning have gained increasing importance. Briz-Ponce *et al.,* (2017); Kim *et al.,* (2017); Crompton and Burke, (2018), in their study revealed that learning is a critical component which allows the individual to learn at any time and place, without being constrained by any physical structures.

Adapting surface structure (SS) do not significantly influence individuals' ***learning to learn representation*** (β = 0.235; p > 0.05).

This study supports similar studies which elevates learning as an increasingly important issue, and has received increasing attention from researchers (Briz-Ponce *et al.,* 2017; Kim *et al.,* 2017; Crompton & Burke, 2018).

Informed Action

Based on the research findings, participants' ***learning to learn representation (LR)*** do significantly influence individuals' ***informed action (IA)*** (β=0.509; p<0.05). The results of this study confirms a positive correlation between learning to learn representation and outcome expectation. The results are similar to those published by (Lin & Huang, 2010; Lin & Huang, 2008; Hsu et al., 2007). These researchers found that individuals with a high confidence, demonstrates behaviour, which positively influence the team's service delivery and project success.

6.3.3 Representation Fedility

Based on the research findings, members' ***learning to learn representation (LR)*** do significantly influence individuals' ***representation fidelity (RF)*** (β=0.571; p<0.05). The findings of this study also support previous findings. Parsons and Cole, (2004) found that the communication aspect of knowledge representation forms needs to be understood before secondary objectives of knowledge representation, such as problem solving, can be explored. While communication and knowledge encoding is arguably more directly related to external knowledge representation forms, problem solving is an important issue in business and organizational settings.

6.3.4 Transparent Interaction

Based on the research findings, members' ***learning to learn representation (LR)*** does significantly influence individuals' ***transparent interaction (TI)*** (β=0.300; p<0.05). The findings of this research support the findings of previous studies which found that LR has a positive effect on TI (Arpaci & Baloglu, 2015; Yu, 2014, Zhang et al., 2014; Peralta & Saldanha, 2014). This also supports the findings of Yu (2014) who found that individual who are embraces learning has positive influence on computer transparency as an

aspect of user friendliness which relieves the user of the need to worry about technical details (like installation, updating, downloading or device drivers.

6.3.5 Effective Use of HRIS

Based on the research findings, participants' ***informed action (IA***) does significantly, positively influence individuals' ***effective use*** of HRIS ***(EU)*** (β=0.417; p<0.05).

The findings of this study supports the findings of Tsai & Cheng, (2012). Their study found that there is a positive correlation between informed action and effective use. Furthermore, perceived Informed Action is positively correlated with effective use of HRIS when applying knowledge management systems (Tsai *et al.,* 2013). This study also supported a study undertaken by (Lin & Huang, 2010). This study demonstrated that Informed Action was positively related to engagement in which individuals or groups of people, take reasonable action to address social factors. By so doing, they deliver effective of services.

A study undertaken by Van Acker *et al.,* (2014) showed that Informed Action plays an integral role in influencing effective use of Information Systems. The findings of this study contradicts the findings of a study undertaken by (Tamjidyamcholo *et al.,* 2013). The latter study found that Informed Action does not have any significant relationship with effective use.

6.3.6 Behavioural Intention

Based on the research findings, members' ***effective use (EU)*** does significantly influence individuals' ***behavioural intention (BI)*** (β=0.694; p<0.05). The results are consistent with previous published studies ((Venkatesh *et al.,* 2003). Furthermore these results support those published by (Davis *et al.,* 2010; Deci & Ryan, 1980). Their study determined behavioural intentions, and subsequently the use of systems.

6.3.6 Intrinsic Motivation

The relationship between ***acceptance and Use (AU)*** is mediated positively by ***Intrinsic Motivation (IM)*** significantly (β=0.421; p<0.05). The results of this study are similar to previous studies conducted by (Kuo, 2012). These studies illustrated that different reward types play an instrumental role in HRIS acceptance within organisations.

Pee at el., (2010), the appropriate implementation of rewards, effectively promotes the willingness of individuals to use technology, contribute to team success, while effectively nurturing team spirit. Intrinsic motivation can be defined as behaviour which is driven by internal rewards (Kuo, 2012). Motivation to engage in a behaviour which surfaces from within the individual and manifests as natural satisfaction (Voelpel & Han, 2005; Wickramasinghe & Widyaratne, 2012; Pee *et al.,* 2010).

Former research has linked expectations of internal and external rewards, to acceptance of technology use. For example, Wang and Hou (2005) found that hard/extrinsic rewards (i.e. financial reward, promotion, and reciprocity) and soft/intrinsic rewards (i.e. relationships with others and personal reputation), is positively correlated with use and acceptance of technology.

As shown in Table 6-1, a summary of the research hypotheses is provided under the research question. Six hypotheses (i.e., H11, H14, H15, H16, H17 and H18) are supported by the empirical findings and twelve hypotheses (i.e., H1, H2, H3, H4, H5, H6, H7, H8, H9, H10, H11 and H12) are not supported.

Table 6-1 Summary of Hypothesis testing results

Research Questions and Hypotheses Statements		Results
Question 1: To what extent is the behavioural intention to use of Human Resource Information Systems by individuals, in South African State-owned Agencies?		
H1	Performance expectancy influences individuals' behavioural intention to employ HRIS.	Not Supported
H2	Social influence Individuals' behavioural intention to employ HRIS.	Not Supported
H3	Facilitating condition influences individuals' behavioural intention to use HRIS**.**	Not Supported

Research Questions and Hypotheses Statements		Results
H6	Effort expectancy influences individuals' behavioural intention to use HRIS.	Not Supported
H7	Intrinsic Motivation positively influences behavioural intentions to use HRIS.	Not Supported
H9	Extrinsic Motivation positively influences behavioural intentions to use Human Resource Information System	Not Supported
Question 2: What factors explain effective use of Human Resource Information Systems by an individual is in South African State-owned Agencies?		
H4	Individuals' behavioural intention influences acceptance and use of HRIS (AU).	Not Supported
H5	Self-efficacy affects individuals' acceptance and use.	Not Supported
H8	Intrinsic Motivation positively influences the AU.	Not Supported
H10	Extrinsic Motivation positively influences the AU	Not Supported
Question 3: What factors are significant in predicting the effective use of Human Resource Information Systems?		
H11	Adapting physical structure (AP) influences individuals' learning to learn representation (LR).	Not Supported
H12	Adapting surface structure (SS) influences individuals' learning to learn representation (LR).	Not Supported
H13	Learning to learn representation (LR) influences individuals' informed action (IA).	Supported
H14	Learning to learn representation (LR) influences individuals' representation fidelity (RF).	Supported
H15	Learning to learn representation (LR) influences individuals' transparent interaction (TI).	Supported
Question 4: in what ways can individuals in South African State-owned Agencies effectively use Human Resource Information Systems?		
H16	Informed action (IA) positively influences individuals' effective use of HRIS (EU).	Supported
H17	Adapting surface structure (SS) positively influences the AU.	Supported
H18	The relationship between AU is mediated positively by IM.	Partially Supported

6.4 QUALITATIVE SURVEY INTERPRETATION

The survey encouraged participants to share their views and opinions to gain contextual insights. These qualitative insights are strongly linked to human emotions and human behaviour.

In this study, a total of 11 participants responded to the qualitative questions that were posed in the survey. Qualitative responses were not mandatory. Participants had a choice to complete these questions. Similar responses were aggregated as one as illustrated in Table 6-2 below. This table lists the individual users' profile for the follow-up study.

6,4,1 Outcome of Follow-up Qualitative Survey

The survey encouraged participants to share their qualitative views and opinions concerning contextual insights. These qualitative insights are strongly linked to human emotions and human behaviour.

In this study, a total of 11 participants responded to the qualitative questions posed in the survey. Qualitative responses were not mandatory. Participants had a choice to complete these questions. Similar responses were aggregated as one as illustrated in Table 6-2 below. This table lists the individual users' profile for the follow-up study.

Table 6-2: Human resources information system users' profile for the follow-up study

Region	SOA's	Qualification	Gender	Age	Years' Experience	Occupation
Gauteng	Eskom	MBBS	Female	35	6	HR Manager
Gauteng	CEF	MSc	Female	52	25	Project Manager
Gauteng	IDC	BSc	Female	30	5	HR Officer
Gauteng	CEF	MSc	Female	35	-	HR Manager
Gauteng	SANEDI	BSc	Male	27	3	Finance Manager
Gauteng	CEF	Cert	Male	50	-	Project Officer
Gauteng	CEF	Dip	Male	20	1	HR Administrator
Gauteng	SANEDI	MSc	Male	32	5	HR Officer
Gauteng	ESKOM	BSc		22	2	HR Officer
Gauteng	ESKOM	BSc	Male	18	4 months	HR Business Partner
Gauteng	IDC	BSc	Male	25	3 months	Procurement Officer

Table 6-1 above, lists the respective hypotheses generated for this research based on the study objectives and research questions. The research results confirmed that **four** out of 18 hypotheses, were ultimately supported. These hypotheses included H3; H6; H15; and H16; These 18 hypotheses were tested to determine the conceptual research model of acceptance and effective use of HRIS.

H3: Facilitating condition influences human resources practitioners' behavioural intention to use HRIS.

The study does not support this hypothesis. This is supported by the responses received from participants to the survey. Responses from the follow-up study that supported the empirical analysis result indicated:

"Little provision"

CEF: "Very cumbersome"

IDC: “The installation of internet-enabled computers manual, brochure,
CEF: “There is very little done here to that effect”
SANEDI: “Only poster and it helps” presented next.
CEF: “Internet facility, desktop computer/iPad, training on the use of these technologies about its use is not provided”
ESKOM: “They need to organise training, workshop, etc.”
CEF: “The provision by the organisation has not been adequately provided”
IDC: “The provision of internet facility”

H6: Self-efficacy influences ease of use in Human resources practitioners' acceptance and use of HRIS

This hypothesis is similarly not supported given the responses derived from the follow-up study. The follow-up study that supported the empirical analysis result are subsequently presented.
CEF: “I am confident to use HRIS”
CEF: “I have confidence in the use of HRIS”
IDC: “The human resources information system plays an important role in the SOA's setting, am moved with eagerness to harness first-hand information as to go for the best available HRIS”
IDC: “Influences the use of technology positively”
IDC: “It's fairly okay but can be better improved with subsequent trainings and seminars”
SANEDI: “In my organisation, it's only posters, no computer, and with the poster I learn, so it gives confidence
ESKOM: “I have confidence”
CEF: “I have the confidence on the use of HRIS”
IDC: “Am confident”

The study does not support hypothesis H4 even though responses obtained in the survey confirmed that HR practitioners were confident in utilising HRIS. This indicates that it is prudent to provide adequate facilitating conditions, which enables the effective use of HRIS by HR practitioners.

H15: Representation fidelity influences human resources practitioners' effective use of HRIS

Similarly, the study does not support this hypothesis. Responses obtained in the follow-up survey provides the necessary evidence. Responses which supported empirical analysis results are highlighted.
CEF: "Not familiar with the interface too"
SANEDI: "Not applicable"
CEF: "None is available here"
IDC: "If available, it will be very good"

IDC development area is the highest representation in the data used for the statistical analysis for this study. Hypothesis H15 is not supported by the research results, even though survey responses indicated that health practitioners are confident in using HRIS. Adequate facilitating conditions must be provided to enable health practitioners to effectively use HRIS.

H16: Transparent interaction influences health practitioners' effective use of HIS.

The results similarly does not support hypothesis H16. Responses obtained in the follow-up survey clearly serves as supporting evidence. Responses in the follow-up study which have supported this hypothesis are as follows:

IDC: "Not so conversant with the texts, figures and tables too but I'm sure it would go a long way if available"
IDC: "To a large extent, it's a better template and helps make my report right on time"
CEF: "It helps to assess information readily
SANEDI: "Don't understand"
CEF: "It helps me will know new things, new ways to do my job"

Although responses attested that HR practitioners were confident in using HRIS, **Hypotheses H16** was supported. This shows that it is prudent to establish an adequate

facilitating condition which facilitates the effective use of HRIS by HR practitioners. Appendix A illustrates the overall results for HRIS acceptance and effective use by HR practitioner service delivery.

6.4.2 A Model for Effective Use of HRIS in South African State Owned Agencies

This section gives a perspective on why certain hypotheses were rejected. It presents statistical analysis and empirical evidence in support of the structural equation modelling. It further presents the validated model, for effective use of HRIS by individuals, in SOA's.

The model depicts factors which influence individual's acceptance and use and subsequent effective use of HRIS. Intrinsic Motivation, Adapting surface structure, is collectively factors that influence the acceptance and use of HRIS. Learning learn representation, Representation fidelity, transparent integration, Informed Action are all factors which influence the effective use of HRIS. Figure 6-3 represents the model for effective use of the HRIS. It is a combination of Figure 6-1 and Figure 6-2. The model of effective use of HRIS is shown in Figure 6-3. The model only shows those constructs where the hypothesized relationships were supported and validated through structural equation modelling. Figure 6.1 is final Research Model 1 and Figure 6.2 in the final Research Model 2.

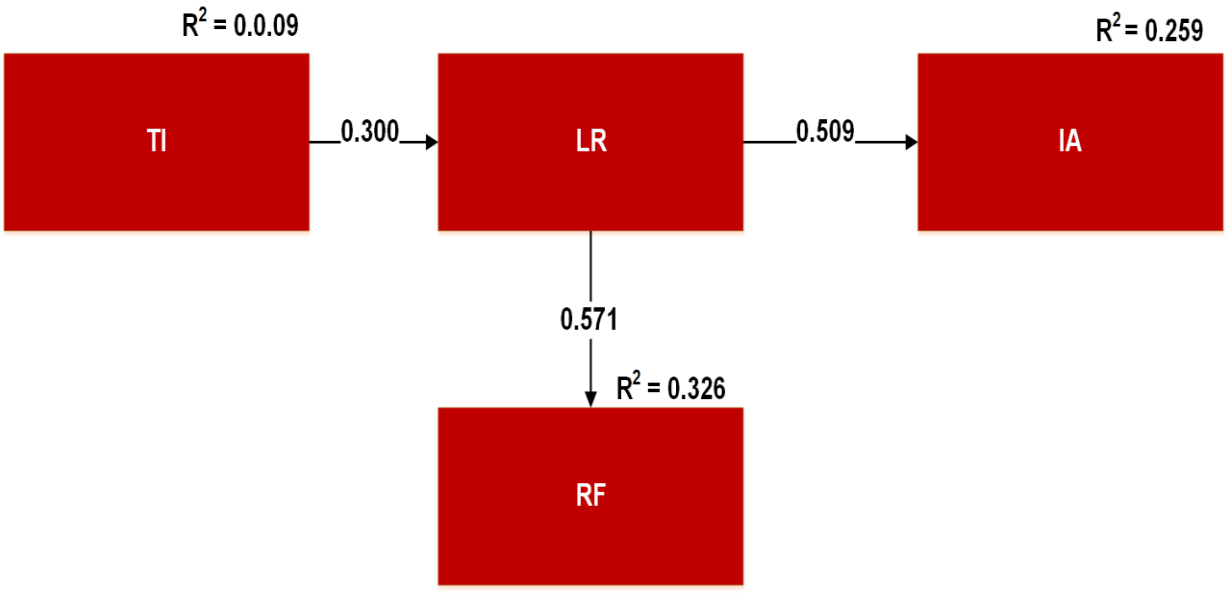

Figure 6-1 Results of Test Model 1

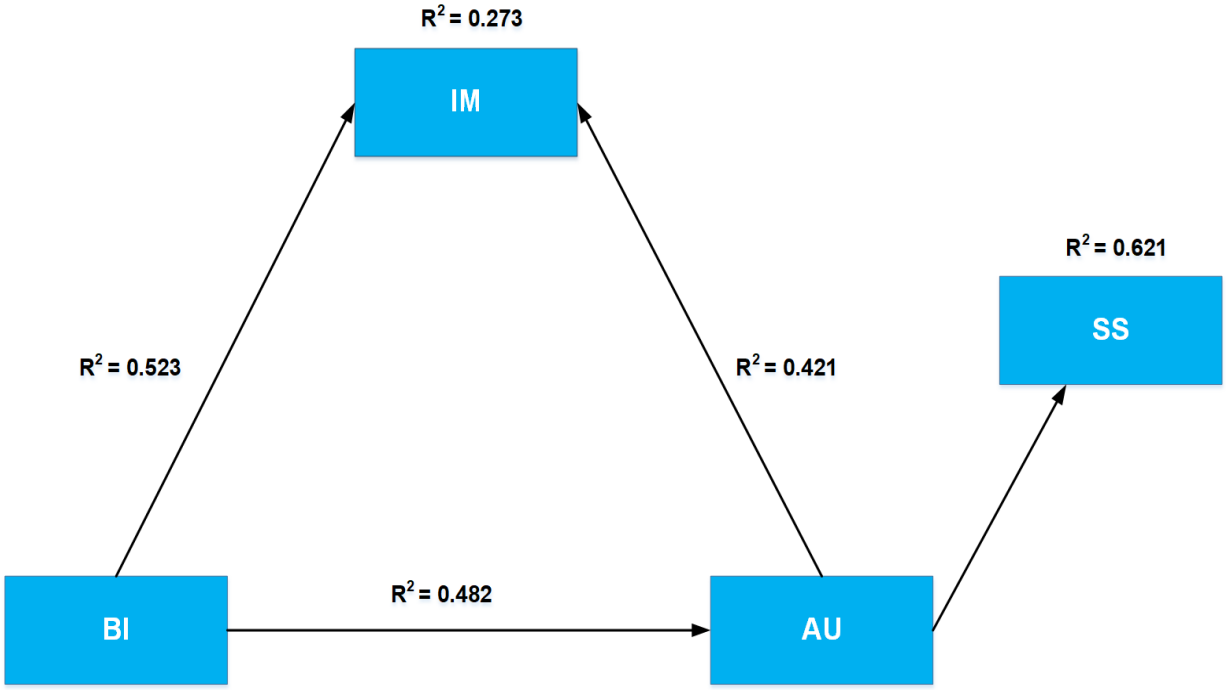

Figure 6-2 Results of Test Model 2

Figure 6-3 below, shows the final model for acceptance and effective use of HRIS amongst individuals after the test of the structural model was conducted using partial least square.

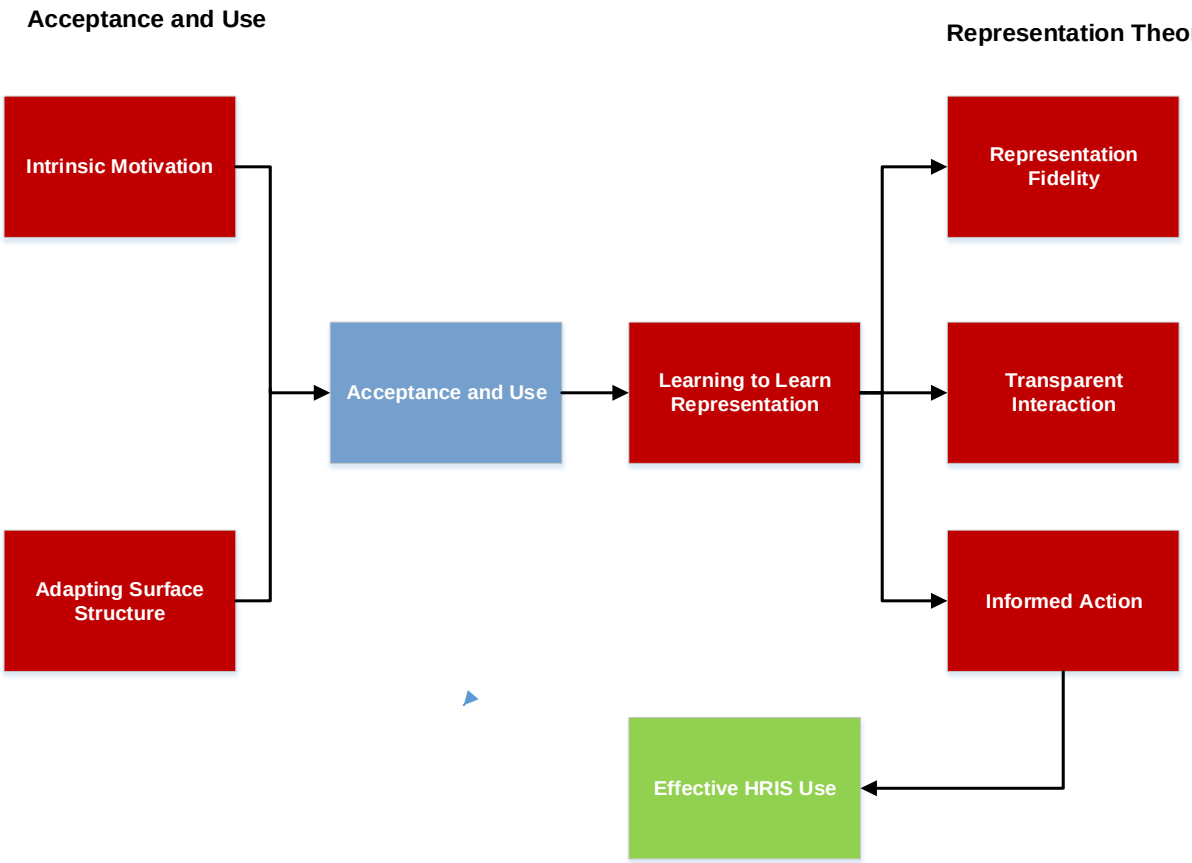

Figure 6-3: Model for Effective Use of HRIS in South African SOAs

HRIS use was found to have a positive correlation with individual performance as confirmed by empirical evidence collected during the study. Individuals are therefore able to produce a better quality output of information system tasks assigned to them when effective use take place.

Intrinsic Motivation is positively correlated with acceptance and use. This implies that individuals feel comfortable when their peers are competent to use HRIS and related tasks as they will not compromise them intentionally.

Furthermore, there is a positive relationship between self-efficacy and acceptance usage of technology. This implies that individual self-confidence positively correlates with attitude or behavior towards computer use. Finally, self-efficacy is positively correlated with outcome expectations. Individuals having self-confidence in using HRIS leads to a positive outcome.

6.5 SUMMARY OF THE CHAPTER

This chapter interpreted key findings based on results presented in Chapter 5. The chapter gave the model for use of human resource information systems. It also discussed the qualitative data collected to contextualise the results.

Chapter 7 provides an overall summary of the research and concluding remarks in respect of this study.

CHAPTER 7: EVALUATION OF THE RESEARCH AND THESIS CONTRIBUTIONS

7.1 PRELUDE

The chapter provides the reflection on the research jpourney; objectives and how these were met along with the formulation of thesis contributions. These contributions are articulated in terms of context, methodological, practical and theoretical contributions. The chapter concludes with a summary of the study limitations and recommendations for future studies.

7.2 THESIS OVERVIEW

The thesis is structured in terms of the problem statement, research context, literature review, methodology, results and discussion, and conclusion. This approach was found useful in offering the reader a logical and systematic sequence presented in each chapter.

Chapter 1 contextualises the importance of the study by providing background to the research problem. It introduces various human resources and technology concepts. It further highlights the importance of undertaking the study. The goal of the study was to develop a model for effective use of HRIS in South African State Owned Agencies. It also formulates the problem statement upon which the research is based. The research objectives and questions driving the study were also given in this chapter.

Chapter 2 This chapter surveyed the scholarship through a systematic literature review.. Various literature concepts and relevant theoretical foundations, knowledge gaps, and limitations were identified and discussed.

Chapter 3 reviews and analysed theories and models underpinning this study. These theories included Unified Theory of Acceptance and Use of Techonology, Self

Determination Theory, and Representation Theory These theoretical frameworks and models informed the research model and the hypotheses.

The research methodology followed in this study is comprehensively discussed in **Chapter 4**. The chapter further elaborates on the data analysis techniques employed in this study.

Chapter 5. Key presented based on analysis derived from both the measurement and structural models. Furthermore, findings of mediating relationships are presented based on mediating analysis procedures developed by (Baron & Kenny, 2006).
A summary of the hypotheses and research findings specific to the four research questions are presented in **Chapter 6**.

7.3 STUDY OUTCOMES

The primary research question driving this study was – "What influences individual acceptance, actual use, and subsequent effective use of Human resources Information Systems?" Appropriate data collection methods were applied to gather relevant research information. The data was integral in determining which factors influence effective use of HRIS.

This study hinged on gaps identified in the literature review, which observed the lack of understanding the use and acceptance of HRIS in SOAs. With this in mind, the research questions are revisited. The results to each question is also addressed.

7.3.1 Research Questions

Research Question	**1**	**To what extent is HRIS acceptanced and used by individuals in South African SOAs?**
This is followed by a discussion on relevant factors affecting users' acceptance and use of HRIS.		

Research Question	2	Which factors of Representation theory and Unified Theory of Acceptance and Use of Technology explain the effective use of HRIS of individuals in South African SOAs?
Performance expectancy, Social Influence, Facilitating Condition, Effort Expectancy, Intrinsic Motivation, and Extrinsic Motivation do not positively influence members' intentions within South African State-owned Agencies. The research results validates hypotheses: H1, H2, H3, H6, H7 and H9.		

Research Question	3	What factors are significant in predicting the effective use of Human Resource Information Systems?
The study findings confirmed that members' learning to learn that representation directly influences the "individuals' - informed action, representation fidelity, and transparent interaction. This study *validated hypotheses* H13, H14, and H15. Members' beliefs of adapting physical structures and adapting surface structures *are not positively influenced, by individuals'- informed action*. The study further *validated hypotheses* H12 and H13.		

research Question	4	In which ways can HRIS be effectively used by individuals in South African SOAs?
The study confirmed that members' informed actions are *positively influenced* by individuals' *effective use* of HRIS. Individuals' use of HRIS was positively affected by adapting surface structure. *Attainment* and *utility value* was not supported. The results only *validated hypotheses* H16 and H7. The study confirmed that Intrinsic Motivation significantly mediated the relationship between *behavioural intention* and *use of* HRIS. Intrinsic Motivation *partially mediated* the relationship between *behavioural intention* and *use of* HRIS. It was confirmed that behavioural intention has a dominant mediating effect on the use of HRIS, as opposed to Intrinsic Motivation. The results further validated *hypothesis* H18.		

7.3.2 Research relevance of the present study

Scholars researching information systems ideally need to ensure that their studies are relevant to the body of knowledge of the discipline. In this way it will eliminate the potential error of exclusion of IS artefacts (Benbasat & Zmud, 2003). Researchers are required to produce distinct and legitimate contributions to the IS body of knowledge. Benbasat and

Zmud (1999) therefore emphasises that the research writing style should be interesting, accessible, current, and applicable. The following reflects on the relevance of the study.

7.5.16.1. Research theme and its relevance to Information Systems business leadership

A multidisciplinary team with varying levels of expertise are crucial in contributing the HRIS phenomenon in a very complex IS domain. The literature contends that there is a high HRIS project failure rate. This study envisaged explaining which factors influence the use and acceptance of HRIS. For business leaders, understanding factors which influence the use and acceptance of HRIS is crucial.

7.5.16.2. Is the study unit of analysis most appropriate for an IS business leadership study?

This research output focused on exploring and explaining relevant factors which influence acceptance and effective use of HRIS in SOAs. The unit of analysis in this study was individuals. The cognitive nature of human resource, comprising complex systems design and collaborative problem solving, was the key motivation for employing individuals as the unit of analysis. For this reason this unit of analysis was appropriate and participants provided the necessary impetus to this study.

7.5.16.3. Is the topic relevant to IS business leadership researchers and practitioners?.

An informed understanding of what influences individuals to accept and use informations is important. Various organisations undergo transformation as a consequence of deploying Information Systems. The reason for this is that information syatems help organisations in achieving their strategic objectives. Regrettably, the literature emphasises that many IS projects have previously failed. This has dramatically increased the amount of research investigating the reasons for IS failures and what can be done to circumvent such failures. Future failures may be alleviated by understanding what makes individuals to accept and use an information system.

Better knowledge about those factors which influence use, acceptance and effective use is fundamental to understanding the success of HRIS utilisation, effective service delivery, and IS functioning.

7.5.16.4. Can practitioners use the outcomes of the research?

Effective use can be defined as enabling HR professionals to engage in collaborative problem solving, during HRIS projects. The output from this study has a number of practical applications. The outcomes of this research offers IS practitioners' tremendous insights, into what motivates individuals to effectively use HRIS and subsequently to provide efficient service. The outcomes of this research study could further allow HR business leaders in addressing service delivery challenges and improve individual and team performances.

7.5.16.5. Can the writing style of the thesis be understood by Information Systems business leadership practitioners and scholars?

This study entitled "The model for use of Human Resource Information Systems in South African State Owned Agencies" is compiled in English vernacular. As such, both information systems practitioners and research scholars alike are able to understand its content.

The research thesis has been methodically structured to facilitate ease of access. Acceptance and effective use of HRIS project challenges are presented in this research and critically analysed during this study. The research framework is outlined in the table of contents to make the thesis more reader friendly. This framework makes it easy for the reader to navigate the relevant thesis sections and extract information readily. Each section has a preamble, which presents key snippets of the entire chapter, and sets the scene.

7.3.3 Study Limitations

Theoretical and empirical limitations for this research are discussed here. Discussion of these limitations have manifested in the identification of further research areas requiring attention. In the first instance it is noteworthy understanding how the effect of members' *HRIS dimensions change over time. The two constructs invariably fluctuate over time, and ultimately have an effect on actual HRIS use and intention*.

The research model further proved different to the final model. Therefore, future research should integrate the two models, in order to interrogate the causes of the disjoint. Participants of this research are selected based on purposive sampling and only include current and active HRIS members. *This study has not reached members who have ceased participation in the HRIS*. Further research would be useful, as members of this group could have alternative views, on the impact of proposed constructs towards actual HRIS use and intention.

The study furthermore emphasises the use of dimensions like Performance Expectancy, Social Influence, Facilitating Condition, Effort Expectancy, Intrinsic Motivation and Extrinsic Motivation, as antecedents which describe members' beliefs in respect of behavioural intention. However, it must be noted that attainment and utility value, emerged as non-significant.

These factors have not been dropped from the research model, since they have demonstrated logical relationships, predicated upon prior knowledge. Therefore, further research is required to investigate how these factors are related. *A limitation of this study was that it was not possible to measure acceptance and use directly without mediating through human resources practitioner behavioural intention to accept HRIS, and use of the technology for daily routine activities.*

The other limitation relates to bias introduced when employing the *survey research method*. Podsakoff, *et al.,* (2003) contends that surveys often introduces biases for several reasons. Biases can often be introduced by the following:

- The questionnaire scale length plays an integral role in the manner in which survey participants answer respective questions. Short scales are equally problematics because it forces participants to select similar responses to previous questions which remains fresh in their memories.
- Artefactual covariance observed in relationships may arise when obtaining the same measures for the predictor and criterion variables from the same source.
- Mixing different constructs in the survey can result in difficulties especially in cases where the constructs are similar. This could likely confuse participants who completes the survey.

Finally, additional research is warranted with respect to enhancing the predictive potential of research model, produced in this study. Future research can similarly investigate the influence of members' habits, on continuous behaviour and belief.

7.3.4 Future Research

Future research needs to incorporate the use of a two-stage model, of belief and behaviour change, while employing them in a longitudinal study setting. This will enable the researcher to investigate whether constructs and their relationships, are consistent over time while monitoring the impact of such change on a continual basis.

Theoretical and empirical limitations for this research are discussed here. Discussion of these limitations have manifested in the identification of further research areas requiring attention. In the first instance it is noteworthy understanding how the effect of members' HRIS dimensions change over time.

The two constructs invariably fluctuate over time, and ultimately have an effect on actual HRIS use and intention. Future research needs to incorporate the use of a two-stage model, of belief and behaviour change, while employing them in a longitudinal study setting. This will enable the researcher to investigate whether constructs and their relationships, are consistent over time while monitoring the impact of such change on a continual basis.

The model further *does not support* the relationship between the two final models of this research study. Therefore, future research should integrate the two models, in order to interrogate the causes of the disjoint. Participants of this research are selected based on purposive sampling and only include current and active HRIS members. This study has not reached members who have ceased participation in the HRIS. Further research would be useful, as members of this group could have alternative views, on the impact of proposed constructs towards actual HRIS use and intention.

The research furthermore emphasises the use of dimensions like Performance Expectancy, Social Influence, Facilitating Condition, Effort Expectancy, Intrinsic Motivation and Extrinsic Motivation, as antecedents which describe members' beliefs in respect of behavioural intention.

However, it must be noted that attainment and utility value, emerged as non-significant. These factors have not been dropped from the research model, since they have demonstrated logical relationships, predicated upon prior knowledge. Therefore, further research is required to investigate how these factors are related.

Finally, additional research is warranted with respect to enhancing the predictive potential of research model, produced in this study. Future research can similarly investigate the influence of members' habits, on continuous behaviour and belief.

7.4 CONTRIBUTIONS OF THE THESIS

This thesis focused on the development of a model which can be applied to promote the effective use of HRIS in South African State-owned Agencies. It empowers HR practitioners to perform effective HR service delivery, while rendering meaningful administrative functions. The research study identified several factors which influence user preference of HRIS, and subsequent effective use.

The use and effective use of HRIS, streamlines the delivery of such essential services. Furthermore, this research output investigated factors which typically influences individuals in the deployment of technology, for purposes of delivering these services.

7.4.1 Theoretical Contributions

The study triangulated three theories; Representation theory, UTAUT, and SDT. This culminated in a comprehensive research model that was validated to explain the use of HRIS.Theoretical contributions for this research study are provided within the reference framework of these IS theories as well as relevant HRIS literature. The theoretical contribution centres on HRIS characteristics and determinants of use behaviour, confined to the local SOA context. Various theoretical contributions are similarly provided in the text which follows.

In this instance, the research succinctly defines the concept HRIS. The definition provides an extension of the current understanding of HRIS. Extension of the definition hinges on an extensive literature review, evaluation of inherent HRIS characteristics, an identification of theoretical prescripts which underpin the behaviour and beliefs of users within SOA's.

Literature on Information systems use constitutes the building blocks of HRIS characteristics. Based on analysis of the literature review, four key theoretical models were chosen and applied in this study. These models included the UTAUT with respect to Information Systems; and representation theory specific to psychology Social Cognitive Theory. The theory and models were employed to determine which factors facilitates effective use of HRIS. The research produced two new models for determining the effective use of HRIS within organisations.

The study extends beyond simply investigating the use of HRIS, but more importantly determines the effective use of HRIS in sample organisations. The study provides theoretical contributions by demonstrating the use of IS representation theory, along with unified theory of acceptance in order to determine the use and effective use of HRIS technology.

In addition, SEM analysis was conducted by applying the six stage methodology developed by (Hair *et al.,* 2009). This study evaluated the conceptual research model for effective use of HRIS, as part of a theory, and the theory as a whole. The validated model

of effective use of HRIS comprises three dimensions. Firstly, it proposes effective use of HRIS for HR practitioners in developing countries.

This was done by identifying different variables that can enhance the effective use of the application for effective HR care delivery. Secondly, based on Chapter 2, a theoretical framework of the importance of technology use in HR service delivery is recognised. The study goes a step further by identifying key factors which influences the effective use of technology in rendering HR service delivery.

Thirdly, the study creates associations with the key identified variables that are applied in the new research model. The third dimension recognises different states of technology use for HR care delivery within the context of this research output. This investigation intensified efforts to identify the use and effective use of HRIS within the context of developing countries. Data was collected from HR practitioners an HR care professionals employed at various SOA HR departments.

The systemetic literature review suggested that there is lack of or no known study which addresses the effective use of HRIS with respect to the State Owned Agencies. To this point the theoretical contribution in the developed model for use of HRIS. .

Fourthly, this study contributes to the further development of robust theory on information systems by employing the continuous use model. It confirms which dimensions are critically important within an HRIS context. The study also advances the use of Social Influences and the Intrinsic Motivation model, to extend the use of the HRIS model theoretically.

This study is the first of a kind, to test the HRIS model by introducing the following:

- It employs the Intrinsic Motivation model as a mediating factor. It proposes to mediate the relationship between Behavioural Intention and the use of HRIS. Conceptualisation factors are based on the two models - UTAUT and SDT;
- The use of the Expectation Value model antecedents (i.e., LR and IA) to determine members' beliefs of RF, TI, IA and EU.

Members' beliefs that LR have been identified as a primary factor which influences members' level of RF and TI, within theoretical framework of the HRIS model. The research findings additionally supports theory robustness, which virtually explains all relational exchanges. The study extended the current understanding of the role of HRIS.

The study further contributes, through identifying factors that influences members' use of HRIS, TI, RF and EU. The study is a first to analyse the influence of members' beliefs on AU within an HR context. Formulating an understanding of which factors influence beliefs that are important, provides knowledge about how to better motivate members views as useful within the organisation. In instances where members have a strong belief that the organisation is useful, it encourages continuous member participation.

7.4.2 Practical Contributions

The findings of this research has significant implications for SOAs who employ HRIS as a platform for sharing ideas constructively. SOAs can benefit from this study given that it shares efficient ways to share ideas between individuals within the organisation. Users can typically understand the following:

- The basis upon which users evaluate the degree of satisfaction when the use HRIS;
- How to promote Intrinsic Motivation within an HRIS user; and
- How to encourage users' beliefs of Performance Expectancy, Social Influence, and Effort Expectancy given the use of HRIS.

Practical contributions to this study are presented in the text which follows. This study yields evidence that Intrinsic Motivation can be considered a significant mediating variable. IM significantly mediates the relationship between behavioural intention and the use of HRIS. The research also confirms that R is directly related to members' TI and RF. The study confirmed that members' beliefs of IA are determined by LR, while EU is determined by IA. The following factors TI, RF, LR and EU provided impetus to the final model.

The practical contribution of thesis is in presenting the model that shows the factors which influence the practical use of HRIS in State Owned Agencies.

7.4.3 Contributions to HRIS business leadership Literature

This study investigates the use of HRIS and its application in the SOA's of. SOAs are expected to provide effective, value added services to citizens of the country. This study identifies factors to be considered for the use of HRIS and subsequent effective use of its intended application, to deliver HR services in SOAs. Factors that influence users to apply HRIS technologies, and consequently efficient service delivery is investigated. This thesis now adds and bridges the knowledge gaps with respect to the human resource information systems business leadership literature.

7.4.4 Contextual Contributions

This thesis addresses the use of HRIS in the context of South Africa as a developing country. Effective use of HRIS is said to improve HR service delivery.. This study unveiléd factors that should be considered for the use of HRIS and subsequently effective use of HRIS for what it is intended to be used for in the delivery of Human resources service delivery.

This study explored factors which could influence individuals in the use of technology for human resources delivery purposes. The study contributes contextually by examining these influencing factors in the context of South African state-owned agencies. The context of South Africa and that of its state-owned agencies is unique and different to that of other countries. Most studies have been conducted from the western countries' perspective. To this point, the use of human resource information systems have been studied cognizant to the unique context of South African state-owned agencies. .

7.5 THESIS CONCLUSION

Despite emphasis from the literature on how HRIS can help improve Human Resource service delivery, the acceptance and the use of HRIS is still a key Information Systems

(IS) business leadership issue. IS leaders are grappling with ways to use HRIS effectively. The problem the thesis addressed was that currently, the South African state-owned agencies have invested in human resource information systems; however, to what extent the systems are used and what influences their use by individuals was not yet known.

The systematic literature review conducted suggested that there is no known study and literature that addresses this knowledge gap, leaving the state-owned agencies, among other organizations, with no way of knowing what ought to be done to achieve the HRIS effective use. To this point, this thesis explained factors influences individuals to use and subsequently to use HRIS effectively.

The argument that drove the study was that although SOAs invest heavily in technologies to enable their work and performance, the extent of use and effective use of Human Resource Information Systems was not well understood. The thesis now gives an empirical understanding by explaining which factors influence the use so that the return on investment is realised through effectively using the HRIS.

The original contributions made and articulated in the thesis could now being used to advance theoretical and practical knowledge, especially in the context of South African SOAs.The research journey undertaken was an invaluable knowledge seeking experience. It is hoped that the reader will find value in this thesis.

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ANNEXURES

Appendix A Descriptive Statistics of Representation Theory Variable by Participant

Likert Scale	Value
Strongly agree	1
Agree	2
Neither Agree nor Disagree	3
Disagree	4
Strongly disagree	5

		Frequency	Percent	Valid Percent
PE_1	2	4	1.9	1.9
	3	22	10.4	10.4
	4	106	50.0	50.2
	5	79	37.3	37.4
	Total	211	99.5	100.0
PE_2	2	6	2.8	2.8
	3	38	17.9	18.0
	4	130	61.3	61.6
	5	37	17.5	17.5
	Total	211	99.5	100.0
PE_3	2	5	2.4	2.4
	3	32	15.1	15.2
	4	76	35.8	36.0
	5	98	46.2	46.4
	Total	211	99.5	100.0
EE_1	1	71	33.5	33.6
	2	112	52.8	53.1
	3	21	9.9	10.0
	4	7	3.3	3.3
	Total	211	99.5	100.0
EE_2	1	29	13.7	13.7
	2	95	44.8	45.0
	3	51	24.1	24.2
	4	32	15.1	15.2
	5	4	1.9	1.9
	Total	211	99.5	100.0
EE_3	1	68	32.1	32.2
	2	60	28.3	28.4
	3	48	22.6	22.7
	4	31	14.6	14.7
	5	4	1.9	1.9
	Total	211	99.5	100.0
EE_4	1	50	23.6	23.7
	2	82	38.7	38.9
	3	44	20.8	20.9
	4	30	14.2	14.2
	5	5	2.4	2.4
	Total	211	99.5	100.0

		Frequency	Percent	Valid Percent
EE_5	1	68	32.1	32.2
	2	65	30.7	30.8
	3	49	23.1	23.2
	4	24	11.3	11.4
	5	5	2.4	2.4
	Total	211	99.5	100.0
FC_1	1	43	20.3	20.4
	2	110	51.9	52.1
	3	33	15.6	15.6
	4	22	10.4	10.4
	5	3	1.4	1.4
	Total	211	99.5	100.0
FC_2	1	26	12.3	12.3
	2	86	40.6	40.8
	3	53	25.0	25.1
	4	43	20.3	20.4
	5	3	1.4	1.4
	Total	211	99.5	100.0
FC_3	1	60	28.3	28.4
	2	67	31.6	31.8
	3	58	27.4	27.5
	4	25	11.8	11.8
	5	1	.5	.5
	Total	211	99.5	100.0
FC_4	1	26	12.3	12.3
	2	151	71.2	71.6
	3	19	9.0	9.0
	4	13	6.1	6.2
	5	2	.9	.9
	Total	211	99.5	100.0
FC_5	1	55	25.9	26.1
	2	33	15.6	15.6
	3	59	27.8	28.0
	4	54	25.5	25.6
	5	10	4.7	4.7
	Total	211	99.5	100.0
SI_1	Strongly agree	110	51.9	52.1
	Agree	72	34.0	34.1
	Neither agree nor disagree	15	7.1	7.1
	Disagree	12	5.7	5.7
	Strongly disagree	2	.9	.9
	Total	211	99.5	100.0
SI_2	1	38	17.9	18.0
	2	149	70.3	70.6
	3	17	8.0	8.1
	4	6	2.8	2.8
	5	1	.5	.5
	Total	211	99.5	100.0
SI_3	1	66	31.1	31.3
	2	67	31.6	31.8
	3	60	28.3	28.4
	4	15	7.1	7.1
	5	3	1.4	1.4
	Total	211	99.5	100.0
SI_4	1	26	12.3	12.3
	2	73	34.4	34.6

		Frequency	Percent	Valid Percent
	3	30	14.2	14.2
	4	72	34.0	34.1
	5	10	4.7	4.7
	Total	211	99.5	100.0
SI_5	1	42	19.8	19.9
	2	39	18.4	18.5
	3	26	12.3	12.3
	4	78	36.8	37.0
	5	26	12.3	12.3
	Total	211	99.5	100.0
BI_1	1	66	31.1	31.3
	2	96	45.3	45.5
	3	30	14.2	14.2
	4	18	8.5	8.5
	5	1	.5	.5
	Total	211	99.5	100.0
BI_2	1	10	4.7	4.7
	2	88	41.5	41.7
	3	69	32.5	32.7
	4	37	17.5	17.5
	5	7	3.3	3.3
	Total	211	99.5	100.0
BI_3	1	65	30.7	30.8
	2	101	47.6	47.9
	3	37	17.5	17.5
	4	7	3.3	3.3
	5	1	.5	.5
	Total	211	99.5	100.0
BI_4	1	43	20.3	20.4
	2	119	56.1	56.4
	3	39	18.4	18.5
	4	8	3.8	3.8
	5	2	.9	.9
	Total	211	99.5	100.0
AU_1	1	60	28.3	28.4
	2	106	50.0	50.2
	3	33	15.6	15.6
	4	12	5.7	5.7
	Total	211	99.5	100.0
AU_2	1	27	12.7	12.8
	2	133	62.7	63.0
	3	36	17.0	17.1
	4	14	6.6	6.6
	5	1	.5	.5
	Total	211	99.5	100.0
AU_3	1	62	29.2	29.4
	2	75	35.4	35.5
	3	50	23.6	23.7
	4	23	10.8	10.9
	5	1	.5	.5
	Total	211	99.5	100.0
AU_4	1	47	22.2	22.3
	2	98	46.2	46.4
	3	46	21.7	21.8
	4	18	8.5	8.5
	5	2	.9	.9

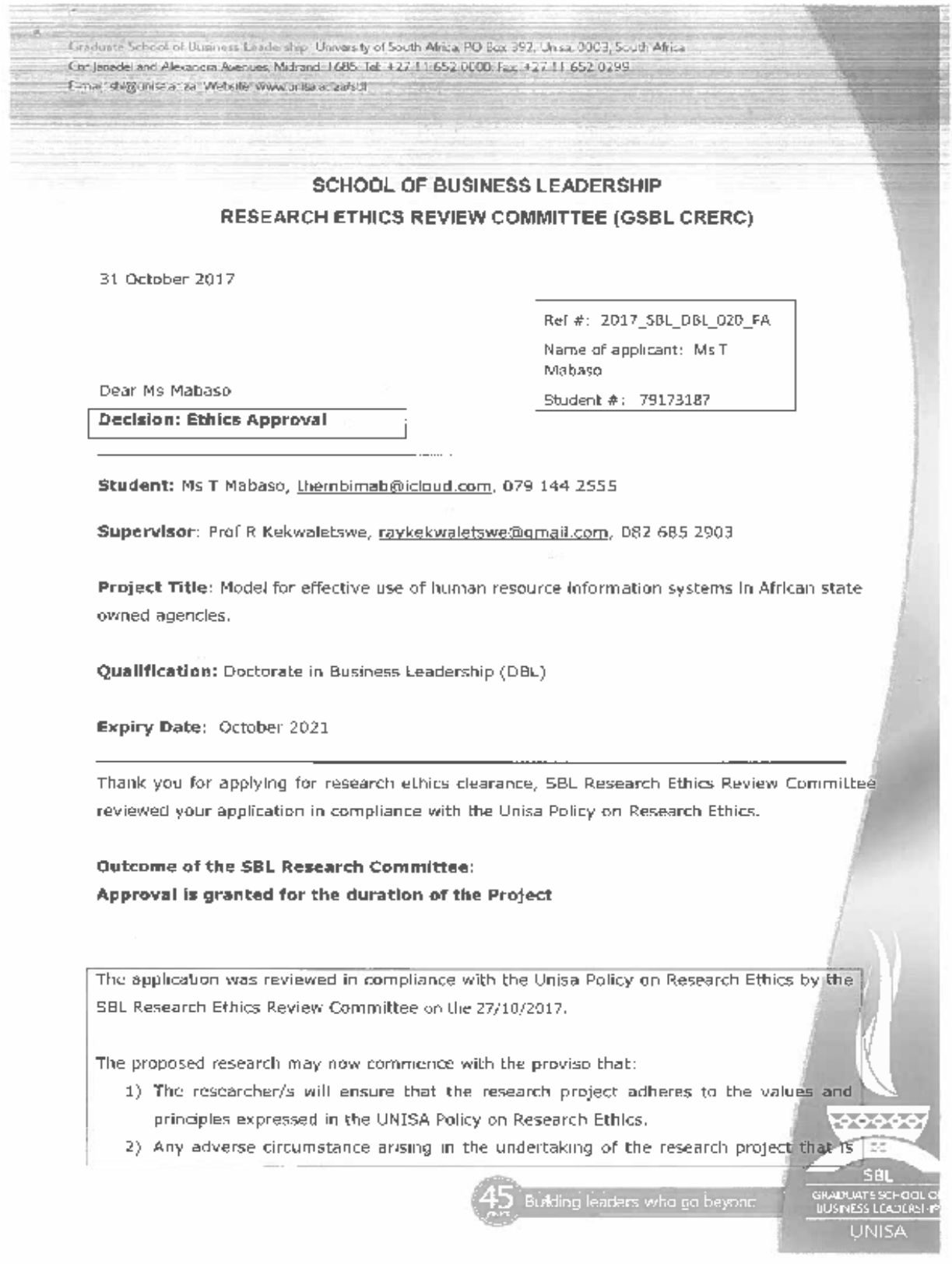
		Frequency	Percent	Valid Percent
	Total	211	99.5	100.0
AU_5	1	61	28.8	28.9
	2	103	48.6	48.8
	3	36	17.0	17.1
	4	10	4.7	4.7
	5	1	.5	.5
	Total	211	99.5	100.0
SS_1	1	83	39.2	39.3
	2	98	46.2	46.4
	3	27	12.7	12.8
	4	3	1.4	1.4
	Total	211	99.5	100.0
SS_2	1	20	9.4	9.5
	2	105	49.5	49.8
	3	70	33.0	33.2
	4	15	7.1	7.1
	5	1	.5	.5
	Total	211	99.5	100.0
SS_3	1	76	35.8	36.0
	2	48	22.6	22.7
	3	64	30.2	30.3
	4	23	10.8	10.9
	Total	211	99.5	100.0
AP_1	1	71	33.5	33.6
	2	68	32.1	32.2
	3	38	17.9	18.0
	4	33	15.6	15.6
	5	1	.5	.5
	Total	211	99.5	100.0
AP_2	1	8	3.8	3.8
	2	75	35.4	35.5
	3	47	22.2	22.3
	4	71	33.5	33.6
	5	10	4.7	4.7
	Total	211	99.5	100.0
AP_3	1	62	29.2	29.4
	2	28	13.2	13.3
	3	53	25.0	25.1
	4	50	23.6	23.7
	5	18	8.5	8.5
	Total	211	99.5	100.0
TI_1	1	62	29.2	29.4
	2	20	9.4	9.5
	3	34	16.0	16.1
	4	87	41.0	41.2
	5	8	3.8	3.8
	Total	211	99.5	100.0
TI_2	1	6	2.8	2.8
	2	69	32.5	32.7
	3	36	17.0	17.1
	4	88	41.5	41.7
	5	12	5.7	5.7
	Total	211	99.5	100.0
TI_3	1	60	28.3	28.4
	2	24	11.3	11.4
	3	37	17.5	17.5

		Frequency	Percent	Valid Percent
	4	78	36.8	37.0
	5	12	5.7	5.7
	Total	211	99.5	100.0
RF_1	1	61	28.8	28.9
	2	128	60.4	60.7
	3	15	7.1	7.1
	4	6	2.8	2.8
	5	1	.5	.5
	Total	211	99.5	100.0
RF_2	1	24	11.3	11.4
	2	150	70.8	71.1
	3	27	12.7	12.8
	4	10	4.7	4.7
	Total	211	99.5	100.0
RF_3	1	63	29.7	29.9
	2	81	38.2	38.4
	3	62	29.2	29.4
	4	5	2.4	2.4
	Total	211	99.5	100.0
RF_4	1	41	19.3	19.4
	2	111	52.4	52.6
	3	54	25.5	25.6
	4	5	2.4	2.4
	Total	211	99.5	100.0
IA_1	1	66	31.1	31.3
	2	105	49.5	49.8
	3	28	13.2	13.3
	4	12	5.7	5.7
	Total	211	99.5	100.0
IA_2	1	17	8.0	8.1
	2	169	79.7	80.1
	3	20	9.4	9.5
	4	5	2.4	2.4
	Total	211	99.5	100.0
IA_3	1	75	35.4	35.5
	2	115	54.2	54.5
	3	15	7.1	7.1
	4	6	2.8	2.8
	Total	211	99.5	100.0
EU_1	1	118	55.7	55.9
	2	72	34.0	34.1
	3	15	7.1	7.1
	4	6	2.8	2.8
	Total	211	99.5	100.0
EU_2	1	89	42.0	42.2
	2	101	47.6	47.9
	3	15	7.1	7.1
	4	6	2.8	2.8
	Total	211	99.5	100.0
EU_3	1	107	50.5	50.7
	2	81	38.2	38.4
	3	17	8.0	8.1
	4	6	2.8	2.8
	Total	211	99.5	100.0
EU_4	1	91	42.9	43.1
	2	82	38.7	38.9

		Frequency	Percent	Valid Percent
	3	18	8.5	8.5
	4	16	7.5	7.6
	5	4	1.9	1.9
	Total	211	99.5	100.0
EU_5	1	55	25.9	26.1
	2	70	33.0	33.2
	3	55	25.9	26.1
	4	27	12.7	12.8
	5	4	1.9	1.9
	Total	211	99.5	100.0
EU_6	1	50	23.6	23.7
	2	73	34.4	34.6
	3	59	27.8	28.0
	4	24	11.3	11.4
	5	5	2.4	2.4
	Total	211	99.5	100.0
MI_1	1	61	28.8	28.9
	2	56	26.4	26.5
	3	72	34.0	34.1
	5	22	10.4	10.4
	Total	211	99.5	100.0
MI_2	1	23	10.8	10.9
	2	86	40.6	40.8
	3	79	37.3	37.4
	5	23	10.8	10.9
	Total	211	99.5	100.0
IM_3	1	58	27.4	27.5
	2	40	18.9	19.0
	4	57	26.9	27.0
	5	56	26.4	26.5
	Total	211	99.5	100.0
IM_4	1	47	22.2	22.3
	2	54	25.5	25.6
	3	76	35.8	36.0
	5	34	16.0	16.1
	Total	211	99.5	100.0
EM_1	1	63	29.7	29.9
	2	27	12.7	12.8
	3	17	8.0	8.1
	4	43	20.3	20.4
	5	61	28.8	28.9
	Total	211	99.5	100.0
EM_2	1	14	6.6	6.6
	2	69	32.5	32.7
	3	18	8.5	8.5
	4	60	28.3	28.4
	5	50	23.6	23.7
	Total	211	99.5	100.0
EM_3	1	55	25.9	26.1
	2	41	19.3	19.4
	3	61	28.8	28.9
	4	46	21.7	21.8
	5	8	3.8	3.8
	Total	211	99.5	100.0
EM_4	1	47	22.2	22.3

		Frequency	Percent	Valid Percent
	2	64	30.2	30.3
	3	49	23.1	23.2
	4	34	16.0	16.1
	5	17	8.0	8.1
	Total	211	99.5	100.0
SE_1	1	51	24.1	24.2
	2	69	32.5	32.7
	3	55	25.9	26.1
	4	29	13.7	13.7
	5	7	3.3	3.3
	Total	211	99.5	100.0
SE_2	1	23	10.8	10.9
	2	82	38.7	38.9
	3	35	16.5	16.6
	4	63	29.7	29.9
	5	8	3.8	3.8
	Total	211	99.5	100.0
SE_3	1	57	26.9	27.0
	2	67	31.6	31.8
	3	63	29.7	29.9
	4	23	10.8	10.9
	5	1	.5	.5
	Total	211	99.5	100.0
SE_4	1	39	18.4	18.5
	2	44	20.8	20.9
	3	25	11.8	11.8
	4	77	36.3	36.5
	5	26	12.3	12.3
	Total	211	99.5	100.0
LR_1	1	100	47.2	47.4
	2	86	40.6	40.8
	3	21	9.9	10.0
	4	3	1.4	1.4
	5	1	.5	.5
	Total	211	99.5	100.0
LR_2	1	51	24.1	24.2
	2	135	63.7	64.0
	3	21	9.9	10.0
	4	4	1.9	1.9
	Total	211	99.5	100.0
LR_3	1	103	48.6	48.8
	2	81	38.2	38.4
	3	24	11.3	11.4
	4	3	1.4	1.4
	Total	211	99.5	100.0

Appendix B Ethics Approval



Graduate School of Business Leadership, University of South Africa, PO Box 392, Unisa, 0003, South Africa
Cnr Janadel and Alexander Avenues, Midrand, 1685. Tel: +27 11 652 0000. Fax: +27 11 652 0299
Email: sbl@unisa.ac.za Website: www.unisa.ac.za/sbl

SCHOOL OF BUSINESS LEADERSHIP

RESEARCH ETHICS REVIEW COMMITTEE (GSBL CRERC)

31 October 2017

Ref #: 2017_SBL_DBL_020_FA
Name of applicant: Ms T Mabaso
Student #: 79173187

Dear Ms Mabaso

Decision: Ethics Approval

Student: Ms T Mabaso, thembimab@icloud.com, 079 144 2555

Supervisor: Prof R Kekwaletswe, raykekwaletswe@gmail.com, 082 685 2903

Project Title: Model for effective use of human resource information systems in African state owned agencies.

Qualification: Doctorate in Business Leadership (DBL)

Expiry Date: October 2021

Thank you for applying for research ethics clearance, SBL Research Ethics Review Committee reviewed your application in compliance with the Unisa Policy on Research Ethics.

Outcome of the SBL Research Committee:
Approval is granted for the duration of the Project

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the SBL Research Ethics Review Committee on the 27/10/2017.

The proposed research may now commence with the proviso that:

1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2) Any adverse circumstance arising in the undertaking of the research project that is

45 Building leaders who go beyond

SBL GRADUATE SCHOOL OF BUSINESS LEADERSHIP UNISA

Appendix C Permission Form CDF

GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)

PERMISSION REQUEST LETTER

A MODEL FOR USE OF HUMAN RESOURCE INFORMATION SYSTEMS IN SOUTH AFRICAN STATE OWNED AGENCIES

Request for permission to conduct research at Central Energy Fund (CEF)

22 August 2017

Mapula Modipa
Central Energy Fund (CEF)
010 201 4726
mapula@cefgroup.co.za

Dear Ms Mapula Modipa,

I, Thembi Mabaso am doing research with Professor Ray Kekwaletswe, in the Department of Management towards a Doctorate of Business Leadership degree (DBL) at the University of South Africa's School of Business Leadership. Presently I have a relationship with the institution as a doctoral candidate.

I am currently engaging in a research project with the following specific details;
The aim of the study is to explore and explain the use and effective use of Human resource information systems by individual's in South African state owned agencies..
The study will entail testing a model for factors that may influence individual's acceptance and use of Human resource information systems, in state owned entities.
The study will focus on the intention and use behaviours it will not study the actual information systems and technologies implemented.

The benefits of this study are the contributes contextually by examining these factors and also contributes towards a theory of effective use of human resource information systems in state owned agencies and that is the thesis gives an insight unique to a state owned agencies.

This study is conceptualised following the strict research ethics standards that will be approve by University of South Africa's School of Business Leadership and data will be kept in a secured place. To maintain your anonymity, the data and results will be presentec only in aggregate form.
Feedback procedure will entail sharing the findings from the research which may be used to improve on service delivery at state owned entities.

Appendix D Sample Signed Consent

CEF SOC Ltd
152 Ann Crescent
Block C, Upper Grayston
Office Park
Strathavon, Sandton
South Africa

Reg. No. 1997/014973/06
P O Box 786141
Sandton
2146

Tel: +27 (0)10 201-4700
Fax: +27 (0)10 201-4900

13th September 2017

Ms. Thembi Mabaso

BY EMAIL

Dear Thembi

I, **Kentse Ramela - HR Business Partner** of CEF SOC Ltd, grant permission to collect data at this site for your research project titled A MODEL FOR USE OF HUMAN RESOUCE INFORMATION SYSTEMS IN SOUTH AFRICAN STATE OWNED AGENCIES.

I grant permission as the authorized person to do so in this company and, I am aware of the following,

1. The study is conducted as a UNISA researcher and remains the property of UNISA
2. You can use the name of the company in your research project
3. All data and information collected will be solely in the possession of the researcher
4. The researcher will ensure confidentiality and anonymity of the respondents
5. The research may be published in the public domain under the supervision of the supervisor
6. I will require feedback of the research

I wish you success with your research.

Regards,

Kentse Ramela
HR Business Partner

Appendix E Sample Signed Consent

19 Fredman Drive, Sandown 2196
PO Box 784055, Sandton 2146, South Africa
Tel: +27 11 269 3000
Fax: +27 11 269 3116
www.idc.co.za

IDC
Industrial Development Corporation

13 September 2017

Dear Professor Ray Kekwaletswe,

I Josephine Gaveni, the Divisional Executive of Human Capital of the Industrial Development Corporation (IDC) grant permission to collect data at this site for your research project titled A MODEL FOR USE OF HUMAN RESOUCE INFORMATION SYSTEMS IN SOUTH AFRICAN STATE OWNED AGENCIES.

I grant permission as the authorized person to do so in this company and, I am aware of the following,

1. The study is conducted as a UNISA researcher and remains the property of UNISA
2. You can use the name of the company in your research project
3. All data and information collected will be solely in the possession of the researcher
4. The researcher will ensure confidentiality and anonymity of the respondents
5. The research may be published in the public domain under the supervision of the supervisor, should this be the case, the permission of the IDC will be sought.
6. I will require feedback of the research

I wish Thembi Mabaso success in her research.

Regards,

Josephine Gaveni
Divisional Executive: Human Capital
Executive Management
Tel: +27 (0) 11 269 3585
Fax: +27 (0) 86 210 3585

Appendix F Eskom Request Form

GRADUATE SCHOOL OF BUSINESS LEADERSHIP (SBL)

PERMISSION REQUEST LETTER

A MODEL FOR USE OF HUMAN RESOURCE INFORMATION SYSTEMS IN SOUTH AFRICAN STATE OWNED AGENCIES

Request for permission to conduct research at Eskom

22 August 2017

Rudzani Tshikota
ESKOM
079 522 5712
rudzani.tshikota@eskom.co.za

Dear Ms Rudzani Tshikota.

I, Thembi Mabaso am doing research with Professor Ray Kekwaletswe, in the Department of Management towards a Doctorate of Business Leadership degree (DBL) at the University of South Africa's School of Business Leadership. Presently I have a relationship with the institution as a doctoral candidate.

I am currently engaging in a research project with the following specific details;
The aim of the study is to explore and explain the use and effective use of Human resource information systems by individual's in South African state owned agencies.,
The study will entail testing a model for factors that may influence individual's acceptance and use of Human resource information systems, in state owned entities.
The study will focus on the intention and use behaviours it will not study the actual information systems and technologies implemented.

The benefits of this study are the contributes contextually by examining these factors and also contributes towards a theory of effective use of human resource information systems in state owned agencies and that is, the thesis gives an insight unique to a state owned agencies.

This study is conceptualised following the strict research ethics standards that will be approve by University of South Africa's School of Business Leadership and data will be kept in a secured place. To maintain your anonymity, the data and results will be presented only in aggregate form.
Feedback procedure will entail sharing the findings from the research which may be used to improve on service delivery at state owned entities.

Appendix G Editorial Letter

Marielle Tappan Faerie Glen, Pretoria
Tel 072 474 1158
Email mteditorialinfo@gmail.com

MT Editorial

To whom it may concern,

I, Marielle Tappan, trading under the name MT Editorial, hereby confirm that I am a language editor.

I have extensive experience in the field of language and publishing and received my Bachelors of Information Science in Publishing from the University of Pretoria. I am also a registered member of the Southern African Freelancer's Association.

I hereby declare that the editing done for any client is done with the utmost diligence and the full appreciation of the English language and all of its intricacies, as was done for this paper. This paper was edited at certain intervals in sections, whilst being completed by the student and additions were being made in-between and after the edit.

If there are any other queries, please do not hesitate to contact me.

Kindest Regards,

Marielle Tappan
Owner, MT Editorial
(BIS)

Marielle Tappan

Appendix H Research Instrument

PART ONE: This part of the questionnaire is about your acceptance and use of HRIS.

Performance Expectancy (PE)

This part asks the question to show the degree to which you believe using HRIS will help you in your job performance. To what extent do you agree or disagree with the following statements?

Question	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I find HRIS useful in doing my job task.	5	4	3	2	1
Using HRIS helps me accomplish my task more quickly.	5	4	3	2	1
Using HRIS increases my job productivity.	5	4	3	2	1
Using HRIS increases the chances of achieving tasks that are important to my job.	5	4	3	2	1

Effort Expectancy (EE)

The next questions are intended to demonstrate the degree of ease associated with your use of HRIS. To what extent do you agree or disagree with the following statements?

Question	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I find using HRIS easy for my job task.	5	4	3	2	1
I think HRIS is complex to use.	5	4	3	2	1
I think I will need more hours when using HRIS because it is complex.	5	4	3	2	1
It takes me a lot of time to use HRIS.	5	4	3	2	1
I devote a lot of energy to using HRIS.	5	4	3	2	1

Facilitating Conditions (FC)

The questions that follow are intended to show the support provided to you as regarding your use of HRIS. To what extent do you agree or disagree with the following statements?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I was trained to use HRIS.	5	4	3	2	1
I have acquired the knowledge necessary to use HRIS.	5	4	3	2	1
The work environment is conducive for me to use HRIS.	5	4	3	2	1
There is a help desk to assist me when I have issues with HRIS.	5	4	3	2	1
I get adequate help from the help desk when I have issues with HRIS.	5	4	3	2	1

Social Influence (SI)

The questions here pertain to the degree to which you perceive that people around you believe you should use HRIS. To what extent do you agree or disagree with the following statements?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
Superiors at the State-owned agency where I work influence my decision to use HRIS.	5	4	3	2	1
People who are important to me at work think that I should use HRIS.	5	4	3	2	1
My supervisor is very supportive of me using HRIS for my job.	5	4	3	2	1
My colleagues encourage me to use HRIS.	5	4	3	2	1
Most of my colleagues use HRIS more efficiently and effectively than I do.	5	4	3	2	1

Behavioural Intention (BI)

Questions here pertain to the degree you have of willingness to continue to use HRIS. To what extent do you agree or disagree with the following statements?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I have no choice but to use HRIS because the management enforces its use.	5	4	3	2	1
I dislike being required to use HRIS.	5	4	3	2	1
I use HRIS as much as I can in order to access useful data.	5	4	3	2	1
I would like to use HRIS for even more tasks than I currently use it for.	5	4	3	2	1

Acceptance and Use (AU)

The questions that follow are intended to show the degree to which you believe the use HRIS influence your job. To what extent do you agree or disagree with the following statements?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I find it easy to use HRIS to do what I want it to do.	5	4	3	2	1
Using HRIS addresses my job-related needs.	5	4	3	2	1
My job would be difficult to perform without HRIS.	5	4	3	2	1
The HRIS provides helpful guidance in performing my tasks.	5	4	3	2	1
Using HRIS saves me time in performing my tasks.	5	4	3	2	1

PART TWO: This part of the questionnaire is about understanding how effective and efficient use of HRIS is in enabling Human Resource service and administration.

Adapting Surface Structure (SS)

To what extent do the surface structure (e.g. screen, menu, report layout, etc.) assist you when using HRIS?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I can learn how to use HRIS when provided with an instruction manual.	5	4	3	2	1
I can complete my daily tasks easily through HRIS screen, menus, and display.	5	4	3	2	1
I can prioritise tasks to use time effectively while using HRIS screen, menus, and display.	5	4	3	2	1

Adapting Physical Structure (AP)

To what extent do you agree or disagree with the ease of using the HRIS computer (keyboard, mouse, disks, etc.)?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I feel comfortable using the HRIS computer keyboard.	5	4	3	2	1
I feel excited when using HRIS for the fear of hitting the wrong key on the computer keyboard.	5	4	3	2	1
I do not like to use HRIS computer for the fear of making a mistake.	5	4	3	2	1

Transparent Interaction (TI)

To what extent do you have access to the data and information in HRIS (e.g. texts, figures, tables, etc.)?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I have difficulty obtaining the information I need due to the system's interface.	5	4	3	2	1
I have difficulty obtaining the information I need due to the physical devices I use.	5	4	3	2	1
I have difficulty obtaining the information that can help improve my job performance.	5	4	3	2	1

Representational Fidelity (RF)

To what extent do you understand the information in HRIS (e.g., texts, figures, tables, etc.) that can improve your job performance?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
The information displayed on HRIS is easy to understand.	5	4	3	2	1
I can navigate easily to find the information I need to perform my task from HRIS.	5	4	3	2	1
I am more organised with the decision I make at work due to the understanding of the information I get from HRIS.	5	4	3	2	1
I am more productive at work due to the understanding of the information I get from HRIS.	5	4	3	2	1

Informed Action (IA)

To what extent do you agree with how well do you understand HRIS's interface?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
I get the information that influences the service I render on my job from HRIS.	5	4	3	2	1
I understand when to apply the information I get from HRIS.	5	4	3	2	1
I understand where to apply the information I get from HRIS.	5	4	3	2	1

Effective Use (EU)

To what extent do you agree with how HRIS helps in providing efficient Human Resources service and administration?

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
The use of HRIS helps me provide better service.	5	4	3	2	1
The use of HRIS helps me provide service more quickly.	5	4	3	2	1
The use of HRIS helps me provide service easily.	5	4	3	2	1
The use of HRIS impedes the Human Resource service and administration I deliver.	5	4	3	2	1
It takes a lot of time to use HRIS which hampered Human Resource service and administration I deliver.	5	4	3	2	1
I devote a lot of energy to use HRIS which hampered Human Resource service and administration I deliver.	5	4	3	2	1

PART THREE: This part of the questionnaire is intended to obtain information about the respondent characteristics.

1. Name of Agency				
2. Gender of respondent	Male			1
	Female			2
3. Age of respondent in completed years [Age at last birth day]	Years			
4. Number of years of working experience				

What is your Occupation/Position (the name or title of your main job)?

If you have any comments regarding the impact of technology used to enhance Human Resource service delivery or on the survey and this questionnaire, please briefly use the space provided below to elaborate using the following headings:

Please comment on how your self-confidence and ability influence your use of HRIS.

Please comment on how HRIS allows you to perform your work or tasks (better or worse).

Please comment on how your determination influences HRIS use.

Please comment on what provision your organisation has put in place to assist you in the use of HRIS.

Please comment on the influence of your colleagues and how it enables you to use HRIS.

Please comment on your willingness to use HRIS for your task.

Please comment on how the hardware (e.g. keyboard, mouse, disks, etc.) provided with HRIS enables you to do your job.

Please comment on how HRIS interface (e.g. screen, menu, report layout, etc.) assists you to do your job.

Please comment on how the information you see on HRIS (e.g. texts, figures, tables, etc.) assists you in making an informed decision in Human resources.

Please comment on the extent you understand that the information in HRIS (e.g. texts, figures, tables, etc.) helps you to improve your job performance.

Please comment on your understanding of the HRIS system interface and how it helps you to deliver Human Resources services or administration.

Please comment on how the training you have received helps you to provide better Human Resource services or administration.